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OBSERVATIONS ON THE TREATMENT OF INFANTILE PARALYSIS IN THE ACUTE STAGE*

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THE physician who examines a patient with suspected poliomyelitis should remember its natural history. The virus of this disease may possibly be prevalent in an infected community and recovered from the gastrointestinal tract of many normal persons. Nevertheless, it strikes but few individuals, making the infection an accident occurring during the process of mass exposure. In many persons, the virus may be present in the gastrointestinal tract without symptoms; in others, the virus may be present with gastrointestinal symptoms; others may perhaps have a stiff neck; some, pain in the muscles; perhaps from 10 to 15% of the patients have slight muscle weakness. These patients with asymptomatic, abortive and non-paralytic types of the disease should be remembered, as they account for the majority who get better no matter what type of therapy is employed and who are usually discharged from the contagious disease hospital cured within a few weeks after admission. Any therapeutic procedure will make a good showing in percentage rates of recovery when such patients are grouped together and considered with those who actually have had paralysis.

The remaining patients compose those who have bulbar, encephalitic, peripheral, segmental, intercostal and phrenic palsies, etc. Physiotherapy is of little value in the bulbar or encephalitic types. About 10 to 15% of the patients in any epidemic will have paralysis, mild or severe, and they are the ones in whom beneficial effects of therapy should be demonstrated.

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To evaluate the effect of treatment in infantile paralysis, there are other factors to be considered. During the hysteria of an epidemic as high as 50% of the patients may have conditions other than those referable to the central nervous system. Individuals may have weaknesses associated with fever; with some contagious or infectious disease; with rheumatic fever, influenza, encephalitis, rabies, measles, herpes, etc.; with the myotonias, the arthritides; with peripheral neuropathies, tumours, fractures, myositis, etc. Three weeks in bed will result in recovery from many of these conditions. If weakness and a little stiffness of the muscles of the legs were our only criteria for diagnosis, many of these non-poliomyelitic patients could be considered as having been successfully treated for poliomyelitis.

When paresis or paralysis is present, it should be at least a quasi-segmental type of a lower motor neuron character and not associated with gross sensory changes. Tenseness of muscle or spasm and the like cannot be accepted in lieu of evidence of paresis or paralysis. The muscles should be meticulously examined to determine the extent of weakness or paralysis. Unless the latter is done, marked beneficiary results can be ascribed to some therapeutic procedure when the patients treated might not even have had poliomyelitis. They may have had simply a disease condition, which in due course would have been recovered from anyway, as in peripheral neuropathy. Finally, the patient should have a spinal tap and the results should be positive. If we have decided that the patient has poliomyelitis, three questions present themselves. Is the patient going to die? If he doesn't die, how severe is his paralysis? When will he recover from the paralysis?

We will confine ourselves here to the therapy of the muscular condition. The objectives of treatment are to avoid overstretching and fatiguing of muscles and thus deformities; to maintain the circulation of muscles and to re-

educate them. To attain these objectives, many procedures are suggested.

Permanently fixed denervated muscles atrophy; permanent casting of normal muscles of experimental animals leads to permanent atrophy; retrograde Wallerian degeneration has been demonstrated by Ranson as early as 1907; obvious atrophy and complete ankylosis can occur from non-use; atrophy and ankylosis may follow disuse in analogous situations because of peripheral neuritis or after a nerve has been cut; casting impedes the recovery of animals where the nerves are crushed.

If a nerve is severed at its emergence from the cord, the muscles supplied by that nerve will (1) lose their tone, (2) atrophy, (3) become the seat of low-grade infiltration and finally (4) become fixed, immobile and useless. If the muscles supplied by a nerve thus sectioned are kept contracting passively and the skin over them functioning, the tone will not be lost for some time; nor will atrophy occur immediately.

If a long enough time elapses after the disease attacks the anterior horn cell and nothing is done, the muscle may become atrophic and hence useless, for even if the nerve should regenerate there is no muscle left to contract. If the tone of the muscle could be maintained and atrophy prevented, there would be viable muscle present if the nerve could once again establish its connection.

Secondary changes do occur in muscles, although poliomyelitis is not primarily a disease of the muscles. It is a disease of the spinal cord and attacks the nerve, not the muscle. For the reasons mentioned, we try to keep the muscles in as good a state as possible to await that time when impulses again traverse such axis-cylinders as remain or recover. This is best done by maintaining a good vascular supply, either by hot packs, infra-red lights, etc. It is not accomplished by permanent fixed immobilization of muscles; such a procedure is contrary to physiological principles.

We start manipulating the muscles within a few days after admission following the fall of the temperature and coincidentally begin good physiotherapy. For over 23 years, I have used infra-red heat, boards under the mattress, measures to combat foot drop and sand bags to keep the patient in a neutral position. I have not used fixed casts. This procedure is not new, Feiss following it 10 years before I did. The least that can be said is that we have persistently treated patients in a certain way for over 20 years, that the patients have not been harmed, and that our results are as good as any thus far reported.

In treating our patients, we, like others, aim to achieve balance, not necessarily strength. There is nothing new in this. We keep patients in bed if muscles are too weak to bear weight. We have them try to project motor impulses as described by Feiss in 1923. We try for a sense of movement by the usual methods that every physiotherapist knows; for movement with the best muscle response with the least muscular effort, for movement in an increased arc of motion by passive aid or movement against gravity, and finally for movement against increased opposing pressure. We get the patients out of bed early if gravity is not an adverse factor. None of this is new.

Some authorities forbid the use of braces. This stand is dogmatic. I, too, do not see why splints should be used in the early stage of the disease, but I would use them in children or other patients that cannot be controlled. No one has proved that braces, applied by the average orthopædic man for the duration of the early stage of the disease, have caused damage, if worn under the guidance of an intelligent individual who takes them off at intervals and employs proper physiotherapy. Those who put patients in casts and forget them, probably have had marked deformities develop as a result. Curiously, one of the best splints to use in infants is the Kenny pack.

Many patients are admitted to the hospital desperately ill and in the throes of respiratory distress, cyanotic, gasping for breath, with lost gag reflexes and a collection of mucus in the throat, which cannot be coughed out. If the patient is placed in a dependent position with the head down and to the side to facilitate drainage, and an aspirator is employed to suck out the secretion from the throat, he recovers from the dyspnœa almost immediately. Such patients do not need a respirator nor any complicated therapy. Patients may also have difficulty when the intercostal and diaphragmatic muscles are involved. Here a respirator is essential since the patient may suffocate unless one is used.

The bladder and intestines are paralyzed early, often long before the patient has paralysis of the arms and legs. Curiously, no matter how much the bladder is paralyzed, it returns

to normal within a few weeks with or without treatment, providing it has been emptied daily. The intestines likewise resume their rhythm in approximately the same length of time despite treatment. Since the gastrointestinal tract is filled with virus, the rectum should be emptied daily.

The extent of the pathological progress in the cord bears no absolute relationship to the objective clinical findings. Neurones may be destroyed without obvious peripheral evidence of disease. On the other hand, a few neurones and their axis-cylinders may still be alive, despite the fact that muscles supplied by a particular segment may appear to be completely paralyzed. These conclusions are not theoretical. They have been obtained from a study of the experimental disease in monkeys as compared with the pathological findings at autopsy, from findings in a patient who had recovered from poliomyelitis and died from another infection, and from clinical experiments with infra-red heat applied to patients with paresis of isolated muscles. It can be concluded, therefore, that physiotherapy should be employed for a long time—two years or so—especially if there is any suggestion of improvement.

In those who have paresis or paralysis there is a weakened muscle, the function of which does not return at once. The inability to move these muscles does not arise because of mental alienation. It is the result of physical phenomena that follow pathological reactions. The patient cannot move the muscles because too many motor cells have been destroyed, and the peripheral muscle is in no condition to respond to a weakened stimulus. It is as it were "braked". The patient with weakened or paralyzed muscles may substitute others for those involved. Substituted muscles hypertrophy. The patient who continues using the latter to the exclusion of the opposing weakened or paralyzed muscles develops a new pattern of movement in walking, actually the establishment of a conditioned reflex. In time, the weakened or paralyzed muscles atrophy, imbalance or substitution becomes permanent and deformities result. Even here, with complete fixation, there is no mental alienation in the strict sense of the word, since the patient is perfectly aware of his position in space. We try to prevent the establishment of this conditioned reflex pattern of movement by employing persistent physiotherapy.

In this disease, some muscles may be weak; some strong. This creates imbalance, not inco-ordination. Inco-ordination presupposes that muscles have a normal lower but involved upper motor neuron supply, a lack of reciprocal inhibition and simultaneous contraction of agonist and antagonist muscles. There is no such condition in infantile paralysis. There is simply imbalance and inability to perform movement rhythmically. Attention is paid to every movement, so that all are performed correctly and the habit of correct movement established. The patient is kept in bed until this can be accomplished. A person who has involvement of the muscles of the leg only can be allowed up sooner and be taught balanced walking long before an individual with involvement of the deltoid muscle, especially the pinnate portion of the muscle, can be allowed up. Gravity helps recovery in some instances and hinders in others.

Paralyzed muscles can be stretched and rendered useless if patients persist in moving them against gravity. It is also certain that this danger is over-emphasized and can be ignored if the patient can be controlled. Patients who have weak muscles and wish to use them actively against gravity must be splinted in order to avoid the development of deformities.

Gentle manipulation and mild active and passive movements do not injure muscles nor encourage fibrous tissue deposition.

Patients may have a positive Kernig and a positive Brudzinski sign, signifying meningeal irritation. These signs are nearly always present and when they do occur, they tend to disappear readily in most patients without doing anything about them and, in some, with manipulation of the flexor contracted muscles and a few exposures to infra-red heat. It is not dissimilar to the meningeal irritation that exists with any type of meningitis, where no treatment is necessary. It is possible, however, that there may be mass destruction of cord cells both anterior, posterior and internuncial as well, as a consequence of which there may be aberrant stimuli, proprioceptive stimuli in the skin, producing a persistence of poorly intergraded meningeal signs. In most patients, the meningeal signs disappear within 2 to 25 days after their appearance.

Sometimes muscle examination is frowned upon as being both unnecessary and perhaps harmful. There is no harm in examining a patient and there is no other way to find out what you have done for him unless you know what his initial condition was. We examine our patients. Some state that early active movement prolongs the stage of pain or contracture, or tenderness in the muscle. This is merely an opinion. There is no evidence to support it and it is contrary to our experience at least. It is quite true, however, that activation of a reflexly tonic contracted muscle may be painful, but those who have any experience with early active movement do not deliberately force a patient through such an arc.

Physicians recognize the fact that patients recover spontaneously, but some persons if they have learned this lesson at all have wholly forgotten it for they treat everyone and claim credit where credit is not due. All patients are treated in the hullabaloo of an epidemic whether they have an abortive, non-paralytic or mildly paretic type of poliomyelitis, and sometimes when they do not even have the disease. Treatment is given on the theory that they might become worse, although the evidence never would support such a thesis. Thus, straw men are built to be blown over by a new therapy, to boost consumer demand and to make impressive statistics.

Anyone who has treated infantile paralysis knows that in due time there may be found reflex tonic contractions of those muscles that oppose weakened or paralyzed ones, a reflex described by Sherrington over 75 years ago. It is never present unless there is some weakness in the opposing muscle. This reflex tonic contraction is not present in the average patient for any great length of time. In recommending any new therapy, one must remember this and not use this fact as a yardstick to measure recovery. Reflex reciprocal contractions are not always present, but when they are they usually may be manipulated away very easily, although in some patients it may last a few months unless there is an encephalitic component. Paralysis often comes on without any previous sign of reflex tonic contraction. In the average case, it takes a little time to develop, although it is quite possible that it could occur simultaneously with the advent of paralysis. This reflex contraction of muscle has been known and demonstrated for years. Now it is given the new term of "spasm". In this conception, "spasm" is supposed to be the cause of the weakness which develops in the opposing muscle. The term "spasm" is a loose one, although there is not a great deal of objection to it. It is descriptive enough, but it does not recognize the fundamental fact that reflex tonic contraction of muscles is caused by previously weakened or paralyzed muscles. Spasm does not precede the paralysis; it follows it. It is quite true, however, that if the spasm is very severe, it may aggravate the paralysis present by further stretching paralyzed muscles. In any event, heat and active and passive massage will relieve it.

Pain is mentioned quite frequently, but there is little or nothing said about its natural history. Pain may be present in the abdomen with ballooning of the gut in the paralyzed segment, and it may be relieved by enemas. It may be present in the distended bladder and relieved by catheterization. It may be fleeting in character in the preparalytic stage found in those muscles which subsequently become paralyzed. It may be present in the neck on movement of the head. It may appear when the muscle has become atrophic, shortened and contracted, usually in some flexion position, and easily demonstrable when an attempt is made to stretch the muscle through its normal arc. These are not the types of pain about which there is so much discussion. It is that pain commonly present in unparalyzed opponents of paralyzed muscles, in the reflexly tonic contracted muscles. It is a type of pain which only appears when the muscles are activated; it does not appear in patients who are allowed to remain subjectively quiet. As long as no pressure is applied, there is no pain. However, when the muscle is activated the patient complains bitterly and it may become difficult to move such muscles by manipulation, especially if the tendon is stretched. This pain may be seen simultaneously with or a little after the disease starts and is found not in the paresed or paralyzed muscles, but in the opposing muscles reflexly contracted or in tonic spasm. It is not in the skin; it is not due to exteroceptive impulses. The pain does not last for a long time, perhaps 2 or 3 weeks, or at the most 2 or 3 months, but usually it is closer to 3 weeks. The muscles of the back, the legs and the thighs are the ones most often involved. The neck muscles often escape, but if involved, stiffness

and pain frequently disappear in the average patient within a few days after admission to the hospital and in many instances without any treatment.

It seems simple to formulate a set of rules for treatment and to expect standardized results. These are imponderables which must be considered when one speaks of therapy. The very existence of some accelerates, while others militate against recovery.

Good results with any treatment depend upon (1) the length of time the patient is under complete control of the physician; (2) the length of time the patient can be kept from using the weak muscles against gravity; (3) the age of the patient, (4) his intelligence and ability to co-operate and (5) his will to get well. Recovery is slow and difficult in the patient who does not understand what is wanted, in the lazy person and in the spoiled, pampered child. Infants may recover sufficiently to climb around the crib, only to make substitutions which result in deformities. Adults who insist on walking too soon against adverse advice, those who demand their release from the hospital in the midst of treatment, and those who cannot be kept in bed and controlled because they are satisfied at the moment to use their muscles even though their movements are not rhythmically executed, are the patients in whom deformities develop. This is the fault of the patient; not of the therapy employed.

Lately the public unfortunately has come to believe that certain methods will definitely cure paralysis despite the fact that each patient is an individual problem. Sometimes what may be good for one may not be good for another. Some patients believe that had they been treated thus and so, they would have made a better recovery. It is cruel to encourage the patient or his family in such a thought because it is utter nonsense. A set of taboos is formulated and if any of these are ignored, it is implied that the patient will be brought into dire straits. Why not be honest and face the unpleasant, yet obvious fact that some people will be paralyzed despite any type of treatment?

There are other methods of therapy. Some place patients in casts for a long period of time and then employ physiotherapy. This has been termed by some the "orthodox" method. This is not a common practice, at least not in our locality. There are those who place the patient in splints or casts, remove them daily and employ persistent physiotherapy, a modified orthodox method. Some allow the patient to lie in bed and do nothing until all pain has left and then employ physiotherapy—an expectant method. There is the Kenny method of hot packs, active and passive motion, physiotherapy, etc.

In evaluating results, a person who has had poliomyelitis can be said to have recovered if he can do the same with his muscles that he did before he contracted the disease. He does not have to have acrobatic litheness, and his muscles do not have to be trained to the point where he doubles himself into a knot, for he is a plantigrade animal and as soon as he starts to walk again he will begin to have some contraction of his muscle arcs and some slight limitations.

Kenny's technique is better than that of rigid and long drawn-out immobilization, but not superior to other methods, and not new. It is good physiotherapy and muscle re-education planned and employed by one who is a master of these subjects. Kenny's greatest contribution is that she has made it known that it takes time and money to care for these patients and that it is necessary to keep them in the hospital for prolonged periods, thus giving physiotherapy a better chance. Although not new, she has focused attention on the great necessity for the care of muscles in the early stage. I agree with her that more harm can be done with fixed casts than with early physiotherapy when employed by untrained and careless hands. I must also admit, however, that harm can follow any method if employed by the ignorant and the careless.

SUMMARY

Let me summarize my impressions of treatment. Putting a patient in a fixed cast and keeping him there does not allow for maintenance of circulation and nutrition to the best advantage. Such treatment will probably do the patient harm; physiotherapy and muscle re-education cannot be started early enough.

No one has demonstrated that immobilization for short periods of time, a few weeks or so, harms the patient. If, in addition, the patient is given physiotherapy daily, the results will be good. This has been conclusively demonstrated by the Baltimore group.

Good results can be secured with the Kenny treatment. Her patients are lax. Statistics may not always give a good idea as to the

advantages conferred by her method, but here again the results are not due to any particular therapy but to persistent physiotherapy and to the long time she is able to control the patient. The method is expensive, requiring a large number of nurses and technicians. This is beside the point, however, if it were perfect in all instances, but it too has its failures.

No matter what treatment is applied, the results will depend upon the enthusiasm, the knowledge, the patience and the perseverance of the individual who cares for the patient. Such an individual will get good results no matter whose method is employed. Of course, he must have the co-operation of the patient.

In brief, treatment should be in the hands of one who has patience and persistence and who employs good physiotherapy.

BRONCHOSCOPY IN THE TREATMENT OF PULMONARY ATELECTASIS*

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SINCE the dawn of the anæsthetic era in surgery the most serious of the causes of postoperative morbidity has undoubtedly been the "postoperative chest". We have ample evidence of the magnitude and importance of the problem in the multiplicity of references to it in the medical literature of the past fifty years. During the greater part of this period anæsthetic agents and anæsthetists were expected to shoulder the whole responsibility for the occurrence of these unfortunate sequelæ. As a result, anæsthetists became vitally interested in discovering the cause of these chest complications, and in methods for their treatment. It is a natural development that this interest has been extended to include similar complications in the preoperative surgical patient.

Until recent years the appearance of signs and symptoms related to the chest in the postoperative patient invariably led to a diagnosis of "bronchitis" or "postoperative pneumonia". Only those cases in which there was a well-marked shift of the mediastinal structures were permitted the diagnosis of atelectasis. Gradually some observers began to suspect that many patients who were "chesty" following operation were, in fact, suffering from minor degrees of atelectasis, that is, that they had a lobular rather than a lobar type of atelectasis. This suspicion has been repeatedly and amply confirmed by radiological examination of the chests of such patients, and the new conception of the nature of these complications, thus established, has led to new methods of treatment. The success of the newer methods of therapy has, in turn, served to strengthen the belief that the primary disturbance in all of these patients is an atelectasis, and that "postoperative pneumonia" occurs as the end result of unrelieved atelectasis. In fairness, it must be acknowledged that this conception is not accepted by many physicians; but it is undoubtedly true that in the past these patients have rarely been seen by the physician before the pneumonic process has become established.

I do not propose here to enter into discussion concerning the causes of atelectasis. I believe it to be generally accepted that the initiating factor is obstruction of the bronchial elements which ventilate the affected portion of the lung. Once the atelectasis has developed, this is the only fact which has great importance, because, regardless of cause, this obstruction must be relieved before the affected portion of the lung can be re-expanded.

A great proportion of postoperative patients suffering from atelectasis will clear the secretions from the bronchi and re-expand the collapsed portion of the lung by voluntary deep breathing and coughing. In those cases in which the patient is unable to accomplish this within a period of a few hours, the obstruction must be removed by suction. Failure to do this will result in needless exhaustion of the patient, and the patient is likely to go on to develop pneumonia. The belief is current among prominent British chest surgeons that a significant proportion of these patients, if untreated, will suffer from bronchiectasis as a result of suppuration superimposed on bronchial obstruction.

Of the methods of relieving bronchial obstruction by suction, blind suction through a catheter introduced into the trachea and bronchi through the nose has many advocates. It must be stressed that this method of treatment may cause serious damage to the mucous membrane of the respiratory tract. Suction applied to the mucous membrane will rapidly produce a marked œdema, and if the catheter enters the

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mouth of a small bronchus such œdema will produce rapid and persistent occlusion of the lumen. The traumatic effects of suction may best be demonstrated by examination of the pharynx in patients who have been subjected to repeated suction through a naso-pharyngeal catheter for removal of secretions. One has seen cases where tracheotomy was required as a result of trauma produced in this way.

Suction drainage of the tracheo-bronchial tree under direct vision through the bronchoscope is the most efficient, and at the same time the least traumatic of the methods available for the relief of bronchial obstruction. It offers the advantage of visual assurance that the major portions of the bronchial tree have been cleared, and permits adequate suction to be used without trauma to the mucous membrane of the bronchi. In addition, existing areas of œdema in the bronchial walls may be identified and reduced by the direct application of shrinking solutions, so that subsequent drainage is facilitated.

SUCTION-DRAINAGE BY BRONCHOSCOPE

I have found suction-drainage of the tracheo-bronchial tree through the bronchoscope of particular value in the treatment of three types of patient, *viz.*: (1) Postoperative patients who through pain or debility are unable to remove obstructing secretions from the bronchi. (2) Unconscious patients and those who have suffered injury to the nervous mechanism controlling the cough reflex, such as occurs in lesions of the cervical portion of the spinal cord, or injuries to the mid-brain. (3) Patients with injuries involving the airway, *i.e.*, jaws, pharynx and trachea, with aspiration of blood and other foreign material. I wish briefly to discuss the use of bronchoscopic drainage of the tracheo-bronchial tree in each of these three groups of patients, and to demonstrate by means of a few typical radiographs what results one may expect from this method of treatment.

Postoperative patients. — Postoperative patients who through pain or debility are unable to remove accumulated secretions from the bronchi are prone to develop atelectasis. Unfortunately it is just those factors which favour the development of bronchial obstruction which sometimes make it impossible to procure the voluntary effort required to relieve it. The anoxia, dyspnœa, cardiovascular disturbances and hyperpyrexia which accompany atelectasis quickly exhaust such patients, and prolonged efforts to re-expand the collapsed lung by forced coughing and deep breathing, especially when ineffective, serve only to increase this exhaustion. In such patients bronchoscopic drainage gives rapid and complete relief when it is performed early, and may be performed with topical anæsthesia and adequate sedation without removing the patient from his bed.

Unconscious patients and patients with injury to the nervous mechanism controlling the cough reflex.—Patients who remain unconscious for long periods of time frequently develop atelectasis due to obstruction of the bronchi by retained secretions. In such patients this leads to anoxia and cardiovascular collapse. Repeated bronchoscopic drainage may be required in such patients until the level of consciousness returns to a point where the patient can remove his own secretions by coughing. In cases where there is damage to the mid-brain the cough reflex may be entirely absent for long periods of time.

In patients who have suffered injury to the cervical portion of the spinal cord, with resulting paralysis of the intercostal muscles, the expulsive power of the cough mechanism may be entirely inadequate to remove secretions which accumulate in the bronchi. Usually these secretions may be removed by postural drainage, but when atelectasis has developed removal of secretions by suction under direct vision through the bronchoscope has proved to be the treatment of choice. In those patients with incomplete lesions adequate postural drainage with aspiration of secretions through the bronchoscope when the indications arise will prevent the development of a pneumonic process until the cough reflex recovers sufficient power for adequate removal of bronchial secretions. When such patients require laminectomy, bronchoscopic aspiration of secretions immediately after induction of anæsthesia has made the course of the operation much smoother than we were accustomed to expect before such treatment was adopted.

Patients with injuries involving the airway with aspiration of blood and other foreign material.—These patients frequently have had an established atelectasis on arrival in hospital, with dyspnœa and profound cyanosis, and require immediate clearance of the tracheo-bronchial tree to save their lives, or to make them fit for operation. I believe that without the use of the bronchoscope for the removal of old blood clot, and in some cases, vomitus, from the bronchi, many of these patients would not sur-

vive operation, while many more would suffer severe pulmonary complications.

The following case histories, with the reproductions of the radiographs made before and after bronchoscopic aspiration will serve to illustrate the benefit which may be expected from this form of treatment in cases of atelectasis.

CASE 1

Pte. N.J.B. Seen at the request of the neuro-surgical service with reference to respiratory difficulty with extreme cyanosis and peripheral vascular collapse. Closed cerebral injury 48 hours previously. On examination had complete collapse of the lower lobe of the left lung with pronounced tracheal shift to the left; extreme cyanosis; extremities cold and mottled. Appeared to be *in extremis*.

Diagnosis of atelectasis confirmed by x-ray. Bronchoscopic drainage under topical anæsthesia with cocaine. The trachea contained a moderate amount of white frothy thin mucus. Right bronchi clear. Left main bronchus and lower lobe bronchus were filled with the same type of secretion seen in the trachea. This was removed by suction and then was seen to be coming in profusion from all secondary bronchi of the lower lobe. Cough reflex was stimulated and secretions removed by suction. There was no secretion coming from the left upper lobe.

Immediately after removal of the bronchoscope patient's colour was normal, respiration was quiet, pulse regular and of good quality. X-ray taken before the patient was returned to the ward showed complete relief of atelectasis (Figs. 1 and 2).

Collapse recurred after 8 hours, and aspiration was repeated with similar results. This patient was drained in this manner five times in a period of three days. At the end of that period he died as a result of his midbrain injury. At autopsy there was no evidence of pneumonia, and no evidence of trauma in the tracheobronchial tree.

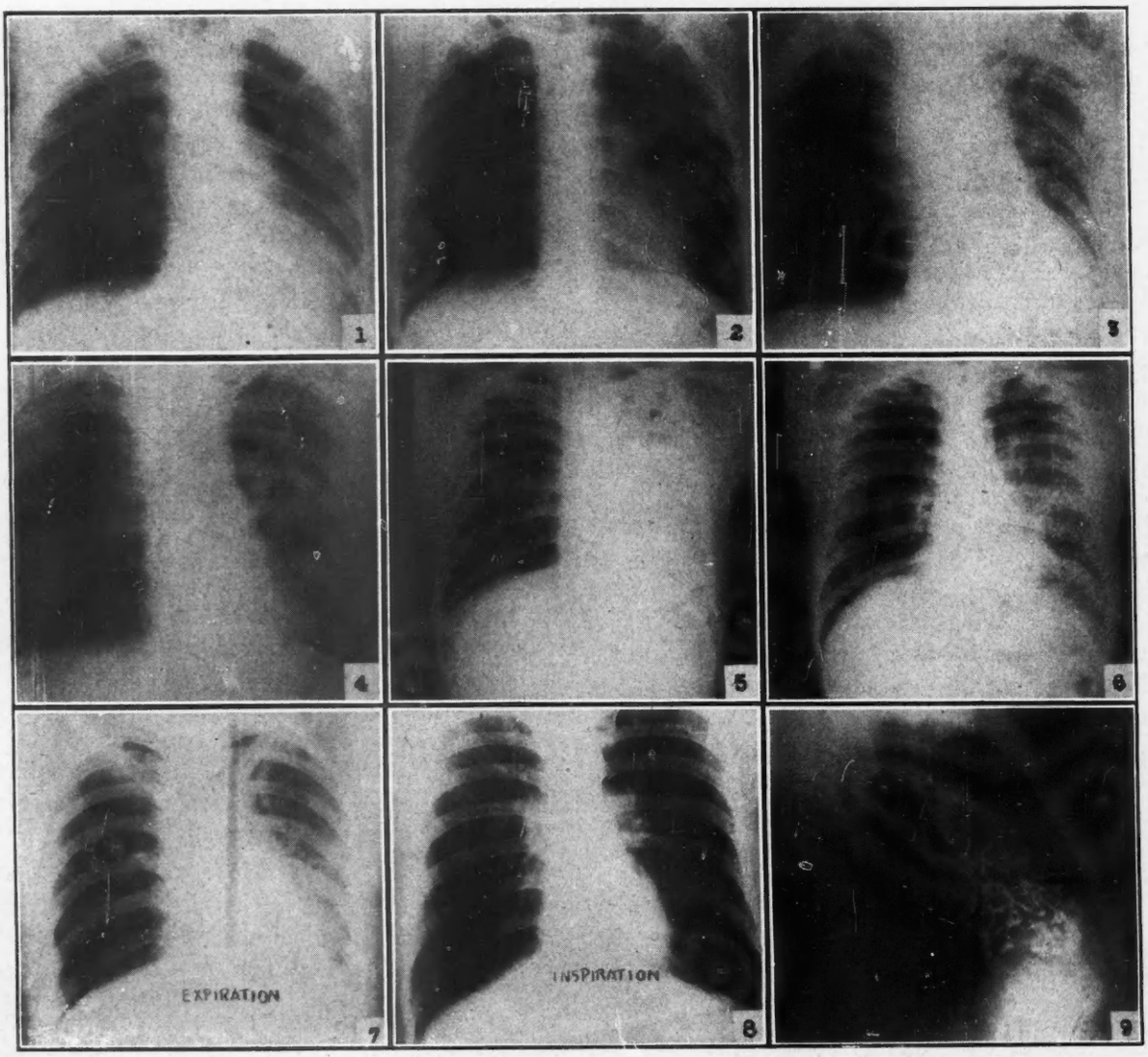

Fig. 1.—Atelectasis of the left lower lobe immediately before treatment by bronchoscopic aspiration. **Fig. 2.**—The same patient immediately after bronchoscopic aspiration. **Fig. 3.**—Atelectasis of the left lung immediately before treatment by bronchoscopic aspiration. **Fig. 4.**—The same patient immediately after bronchoscopic aspiration. **Fig. 5.**—Massive atelectasis of the left lung 30 minutes before catheter aspiration through a Magill's tube. **Fig. 6.**—The same patient one hour after endobronchial suction with a catheter through a Magill's tube. **Figs. 7 and 8.**—Shift of mediastinum on expiration due to failure to collapse the right lung. **Fig. 9.**—Lipiodol bronchogram of the patient shown in Fig. 7.

CASE 2

Pte. H. This patient was seen at the request of the neuro-surgical service for consideration for bronchoscopic drainage for relief of atelectasis of the left lung. There was marked tracheal shift to the left and absent air entry over the whole of the left chest. Patient was cyanosed, with a respiratory rate of 40 per minute and a pulse rate of 140. Oxygen was administered by nasal catheter. Radiological examination showed massive atelectasis of the left lung. Bronchoscopic drainage was done. The trachea was clear. The left main bronchus was full to the carina of a thin secretion which was removed by suction. This secretion filled the whole bronchial tree of the left lower lobe, and was seen coming from the upper lobe bronchus. All secretion was removed by suction. The bronchial mucous membrane appeared normal, but there was no cough reflex on the left side, and no bronchial movements were noted on this side. The right side was clear.

Immediately after removal of the bronchoscope the patient's colour was good, and pulse rate was reduced to 120 per minute. Radiological examination was repeated before the patient was returned to the ward (Figs. 3 and 4).

On the following morning the left lower lobe had again collapsed, but distress was not so great as before. Respiratory rate 36. Bronchoscopic drainage prior to operation for decompression of thoracic spinal cord. Pentothal sodium anæsthesia. Findings were identical with those at previous examination with the exception that there was less secretion apparent in the peripheral divisions.

Suction drainage through an endotracheal tube.—Occasionally atelectasis occurs in a patient in whom the mouth is not available for passage of the bronchoscope. In such patients it has been my practice to introduce a long endotracheal tube through the nose, and by manipulation of the head to pass it into the bronchus of the affected side. Suction is then applied through a small stiff suction catheter passed through the endotracheal tube, taking care to pass the suction catheter not more than 1 cm. beyond the end of the endotracheal tube, and to apply suction only as the catheter is being withdrawn. By applying suction in this way one expects to avoid trauma to the mucous membrane, and the development of a vacuum (negative pressure) in the distal portions of the bronchial tree. This method is less efficient than drainage through the bronchoscope, and is apparently more unpleasant from the patient's point of view. The following case illustrates the results obtained by this method.

CASE 3

Cpl. R.B. This patient was recovering from his 8th operation, a bone graft to the mandible. The bone graft was taken from the left iliac crest. On the morning of the third day after operation temperature was 103° (rectal), pulse rate 120, respiratory rate 36, and there was moderate cyanosis. Breath sounds were absent in the lower portion of the left chest and diminished in the upper portion both anteriorly and posteriorly. There was marked shift of the mediastinum to the left, and retraction of the lower intercostal spaces on the left side. Diagnosis of atelectasis was confirmed by radiological examination.

In this case bronchoscopy was impossible without disturbing the fixation of the mandibular fracture. Topical anæsthesia was produced by 10% cocaine spray, employing a Rowbotham's spray. A Magill's tube measuring 14 inches in length and having a pronounced curve was passed into the left bronchus through the nose, and suction was applied at the end of this tube through a fine plastic suction catheter. A moderate amount of tenacious secretion was removed, and air entry into the left lower lobe was re-established. Radiological examination was repeated one hour after aspiration, and showed re-expansion of the affected portions of the lung, although some haziness remained in the lung field (Figs. 5 and 6).

NECESSITY FOR EARLY DRAINAGE OF BRONCHI IN ATELECTASIS

If one is to hope for rapid re-expansion of a collapsed lobe or other segment of lung following aspiration, it is necessary that the bronchi be cleared within a few hours of the development of the atelectasis. The following case demonstrates failure to re-expand the lower lobe of a lung where atelectasis had persisted for a period of some days before treatment.

CASE 4

Pte. G. This patient was seen on admission to hospital seven days after wounding. He had sustained penetrating wounds of the maxilla and chest and an extensive compound wound of the left forearm. There was a retained metallic foreign body in the left lung. On admission this patient was deeply cyanosed, with a thready rapid pulse. His condition was much improved during the first two hours by administration of oxygen in a tent, and the infusion of reconstituted blood serum. Examination of the chest was difficult due to the location of the wounds. Radiological examination was made with a portable machine. At this time no atelectasis was seen. Further examination on the following day, with greater penetration, demonstrated a triangular area of atelectatic lung behind the heart shadow, and comparison of these plates with those of the previous day made it evident that this area had been present on admission, although it was difficult of demonstration in the original radiographs. Bronchoscopic drainage was immediately performed, and the patient's condition was remarkably improved. However, further radiological examination demonstrated that, while the adjacent areas of lung were much clearer, the triangular area behind the heart shadow persisted. Positive pressure respiration with 5% carbon dioxide in oxygen was instituted for 15 minutes each hour, but this area was not completely re-expanded for six days.

BRONCHIAL OBSTRUCTION IN AN EMPHYSEMATOUS LUNG

In conclusion I wish to present an unusual case, in which there are many features which one is unable to explain at present.

CASE 5

Pte. C. While undergoing treatment for a large superficial gunshot wound this patient developed acute appendicitis. Forty-eight hours following appendectomy his temperature increased from 99 to 104° in a period of two hours, pulse rate increased to 140 per minute, and he was dyspnœic and in great distress. Examination showed absence of breath sounds over the whole of the lower lobe of the right lung, but with slight mediastinal shift to the opposite side. A diagnosis of bronchial obstruction was made, and because co-operation was diffi-

cult it was decided to bronchoscope this patient immediately. Pre-aspiration x-rays were taken, but were not seen before the bronchoscopy was done. At bronchoscopy the right lower lobe bronchus was found to contain a small amount of extremely tenacious clear mucus, which completely obstructed the bronchus. There was some œdema of the bronchial mucosa about this mucus, which involved the mouth of one of the secondary divisions. This œdema was reduced by the application of cocaine and adrenaline solution, and a small amount of similar mucus was removed from the obstructed secondary bronchus. The left side was completely clear.

After bronchoscopy the patient's distress disappeared immediately. Pulse rate was reduced to 100 per minute and temperature to 100° within one hour. Examination of the pre-aspiration radiographs showed emphysema of the lower lobe of the right lung.

Subsequent examination of this patient demonstrated that on forced expiration the mediastinum shifted sharply to the left, while on inspiration it returned to a normal position (Figs. 7 and 8). Further radiological examination recorded this phenomenon, and showed the area of emphysema in the right lower lobe to be still present. On the basis of these findings a diagnosis of ball-valve obstruction of the bronchus was made, and a lipiodol bronchogram was done in the hope of localizing the obstruction. No obstruction was seen, but the area of emphysema in the right lower lobe was filled with lipiodol (Fig. 9). Further bronchoscopic examination failed to demonstrate any obstruction.

In this case one is at a loss to explain the occurrence of fever and marked respiratory distress in association with obstruction of a bronchus ventilating a segment of lung which normally did not collapse, and which must have been poorly ventilated at all times.

SUMMARY

Pulmonary complications have been the most serious cause of postoperative morbidity. It is believed that all cases of "postoperative pneumonia" develop on a basis of unrelieved pulmonary atelectasis. The greater proportion of postoperative patients suffering from atelectasis will remove the obstructing secretions from the bronchial tree by deep breathing and forced coughing, and will then re-expand the collapsed segment of lung. When this cannot be accomplished within a period of a few hours the obstruction may be removed most efficiently and with little discomfort to the patient by aspiration under direct vision through the bronchoscope.

Suction drainage of the tracheo-bronchial tree through the bronchoscope has been found useful in postoperative patients, in patients who are unconscious or who are suffering from injury to the nervous mechanism controlling cough, and in those who have aspirated blood and other foreign material. If aspiration is delayed it may be found impossible to re-expand the collapsed segment of lung immediately, and the danger of a superimposed pneumonic process must be faced.

The results which may be obtained by aspiration of secretions through the bronchoscope in cases of atelectasis are demonstrated in reproductions of a number of radiographs made before and after treatment by this method.

I wish to express my appreciation to the surgeons of the Neurological Surgery and Plastic Surgery Divisions of the Basingstoke Neurological and Plastic Surgery Hospital, C.A.O., for their co-operation in this work, and to Major D. C. Eaglesham for making the radiological examinations and for preparing the slides.

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RÉSUMÉ

Il est généralement admis que les complications pulmonaires sont la cause la plus fréquente de la morbidité post-opératoire. Les pneumopathies qui surviennent après les opérations sont attribuées à de l'atélectasie pulmonaire qui est habituellement secondaire à l'obstruction des bronches par les sécrétions. Cette obstruction peut être levée par la toux ou par de profondes respirations; dans certains cas, toutefois, il faut avoir recours à l'aspiration par le bronchoscope. Cinq cas traités par la bronchoscopie suivie d'aspiration sont rapportés. Les évidences, clinique et radiographique, démontrent le bien-fondé de cette méthode. JEAN SAUCIER

VISUAL SIGNS IN DIAGNOSIS

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"Something we can see, all we cannot see."
—*Robert Browning, 1855.*

AMONGST medical men, there is an accepted axiom that "one physical sign is worth many symptoms." In the old connotation, the more correct one, the symptom is subjective, the physical sign objective, each being separate and distinct, though of widely unequal value. One visible sign alone may, as a material guide, reach closer to the true diagnosis than will any combination of functional symptoms.

In applied medicine, there is everything to be said for cultivating a photographic memory, so to record and memorize a portrait gallery, as it were, of surface appearances to create a valuable diagnostic key. Practice will add constantly to so useful an equipment. It is thus that

dermatology, demanding as it does a thorough knowledge of internal disease, affords a rapid recognition of the real nature of cutaneous manifestations in visceral disease with their meaning and implications. In many instances, the signs of general and local morbid conditions arising primarily within the body are mirrored in the skin. And not only there: routine examination of the blood will reflect microscopic proof of disease in the body with its character and extent, little clinical confirmation being needed:* for example, the essential, associated leucocytosis of pus formation; the eosinophilia of asthma; the high eosinophilia of parasitic disease, of whatever kind; and the red-cell behaviour in Addisonian anæmia.

Though physical signs may confuse, they are in nature true to form, fixed and individualistic, being in their early phase, before treatment is instituted, unambiguous. Each sign seen is to be accepted as clinical fact and the naked truth, to be valued relatively and absolutely, then given its place in the diagnostic scheme.

"Faces are but a gallery of pictures."—*Francis Bacon.*

The appearance of the face can be revealing: the facies of mongolism and cretinism; the greasy, rigid, expressionless face of Parkinsonism; the swollen eyelids and face of chloridæmia and water intoxication, and of trichiniasis; the wash-leather-like plaques of xanthelasma about the inner canthus in cholesterolæmia; the sardonic grin of tetanus; the Hippocratic facies of exhaustion and extreme dehydration; each owns its speaking likeness. Lost outer eyebrows point to hypothyroidism; the mauve malar flush, blue lips and yellow puffy face are ocular evidence of myxœdema; and a pale-yellow tint of skin may bring to light Addisonian anæmia.

In the second week of typhoid fever, the livid vermilion lips contrasting with the pallor of face paints a striking picture that is distinctive. The livid cheek is usual in mitral obstruction; a deep cyanosis in congenital heart disease; a deeper lividity in enterogenous cyanosis; the deepest of all in Ayerza's disease. Thus are limited to a few the chief causes of persisting cyanosis.

Intermitting double ptosis, coming and going with effort and rest, means myasthenia gravis; ptosis which does not intermit, accompanied by aphagia and anarthria of rapid onset, is a sure sign of botulism. Bilateral exophthalmos indicates Graves' disease proper—a primary thyrotoxicosis, never a secondary. Two signs are informing: collapsed eyeballs in diabetes mellitus; and widely unequal pupils as a warning of parasyphilis.

Facial eruptions have a tale to tell: rosacea of achlorhydria; adenoma sebaceum of low mentality or mental deficiency. Telangiectasia of the nose and central parts of the face betokens an established coarse hepatic cirrhosis. In scarlatina, unlike measles and rubella, there is no rash on the face, only a rouge-like flush on the cheeks with circumoral pallor. These three infectious fevers behave like bacterial sensitization phenomena which, though highly contagious, they surely are. Actinic light excites skin eruptions on exposed parts, and this in the presence of porphyrins; but whether these last are cause or effect is a moot point. The therapeutic injection of gold salts will sensitize to sunlight. In taking the clinical history of any patient, it is prudent to enquire into previous medicinal treatment, with the means and manner of it, for here may lurk the whole cause. Sulfonamide sensitivity, with a rash appearing some five days from the start of treatment, is a frequent happening these days. This takes the form of a variable toxic erythema which is long-lasting, liable to be followed by photo-sensitiveness to the drug that may persist even for five years. This sensitivity is wont to be specific for one member of the sulfonamide group only.

Potassium iodide in small dosage may cause iodism: here is the likely reason why so useful a salt has fallen into disfavour. A three-grain dose, even less, thrice daily, in an asthma mixture, I have seen excite a vesicular eruption on the face mistaken for smallpox; as may this vesicular type when occurring in eczema autolytica. A similar eruption may wrongly be taken for a syphilide.

*The late Dr. H.G. of Bournemouth, told the writer about a middle-aged relative who on two separate occasions, because of obstipation and severe abdominal colic—called "toxic episodes", underwent laparotomy without anything abnormal being found in the abdomen. She came to luncheon one day, when he noticed her pallid, anæmic, tired face. Afterwards, on questioning her, she denied any loss of blood whatever. A blood count was done forthwith, revealing secondary anæmia and a high *punctate basophilia*. The old garden sunken well that supplied the household with soft water for all purposes, at once became suspect; when searched, a length of much corroded lead piping was discovered lying loose at the bottom of it. His careful investigation suggested that more than one person had suffered illness and death from lead poisoning by drinking water drawn from the self-same well. (S.W.S.)

On one occasion, I was misled for a time by an iodide eruption provoked by a proprietary "blood mixture"; this had produced lesions on forehead and cheeks that simulated the tumour stage of mycosis fungoides. A cupboard of labelled empty bottles gave the show away.

The buccal mucosa may develop white spots and lines to confirm the presence of lichen planus. Pinhead Koplik spots there, opposite the premolar teeth, declare themselves three days before the appearance of the rash in ordinary measles, to warn of its coming, but to fade with the approach of the rash. A blue line along the gums where they meet the teeth will signify lead poisoning; pigmented spots and specks of faded ink colour, on the buccal mucosa and sides of the tongue where the teeth rub is looked for in Addison's disease. Lesions on the palate endorse the diagnosis of erythema multiforme that has erupted on hands and feet (Fig. 1).

A fissured tongue may imply untreated or dormant syphilis; and a piston action of the protruded tongue will indicate general paralysis of the insane. The "strawberry tongue", white at first, then red in three days, with albuminuria of small amount, will differentiate scarlet fever from erythema scarlatiniforme. In the stuporose, Adie's nose-rubbing sign may localize a cerebral tumour in the pre-frontal region of the brain.

THE NECK

It is on the sides of the neck, under the ears, that the rash of scarlet fever first emerges, the evolution then taking place downwards to fingers and toes, as does its involution when the fever has spent itself.

On the nape of the neck, nuchal eczema occurs in middle-aged women, a neuro-dermatitis which is almost invariable evidence of underlying anxiety and emotional strain. The collar-like, dappled "leucodermia syphilitica" round the neck will proclaim a later syphilide. This blemish occurs oftener in women than in men, in the proportion of 10 to 1; appearing six months after contagion and persisting in spite of all treatment for three or four years or longer; and is infallible evidence of syphilis. Discharging sinuses in the sides of the neck are either scrofulous or actinomycotic (Fig. 2), to the cautious scrutiny greatly differing one from the other. An unconfirmed tuberculous adenitis with sinuses, of lifelong duration, I found in a woman of 72 years to be actinomycotic by the accidental discovery of a "sulphur granule" which, for the moment, under the microscope, displayed the fresh ray fungus in all its glory till it fell to pieces on the glass slide. During her childhood years, when the disease began, her father kept a menagerie. Several years after this new diagnosis, following a long painful illness and much iodine, she died of actino-

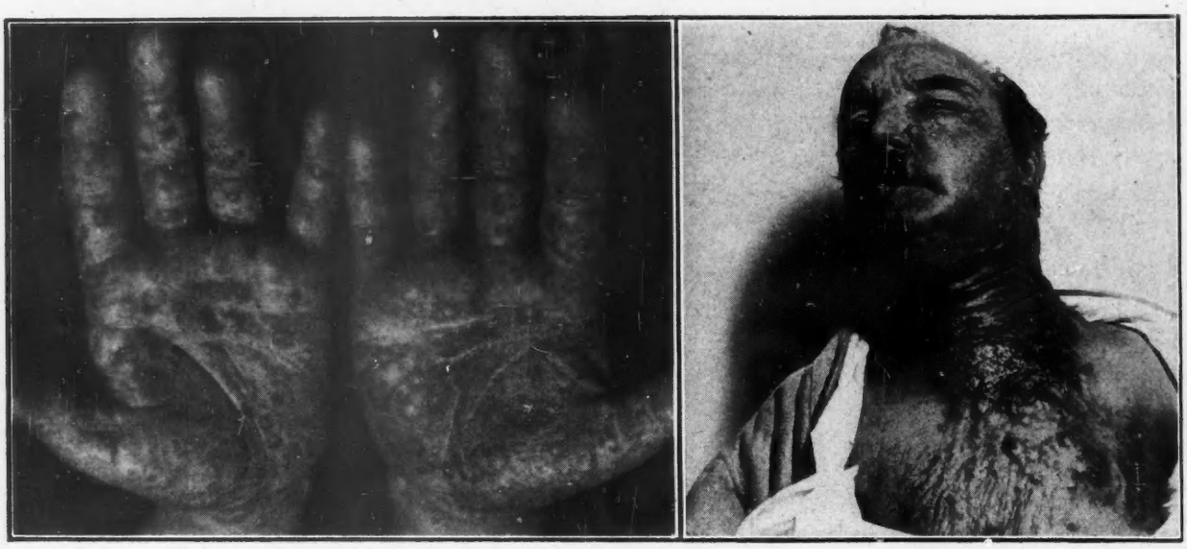


Fig. 1 Fig. 2

Fig. 1.—Erythema multiforme: iris type. **Fig. 2.**—Actinomycosis: advanced, within a few days of death (see Diseases of the Skin; Cranston Low, 2nd ed.).

mycosis of the posterior mediastinum that had eroded deeply three vertebral bodies.

THE FOREARMS

In dermatitis of the forearms, the hair follicles are usually seized upon first, this folliculitis readily becoming staphylococcal and pustular. "Bockhart's impetigo" takes this form, and is now and again the personal plague of the operating surgeon.

A more intense occupational dermatitis is an œdemato-vesicular inflammation of the skin of hands and forearms, extending upwards as far as the sleeve roll-up above the elbow. Being thus limited offers the clue to a local irritant as cause.

also as a detective and psychologist. The yellow xanthoma diabeticorum commonly erupts on the extensor surfaces of the limbs at first, and in a young adult; the colour attracts the attention. The eruption of pellagra; a disease only very occasionally seen in this country, is an erythematous dermatitis on exposed parts in the beginning, being by its singular character and distribution unlike any other dermatosis; this re-erupts during several summers to become in the end atrophic, diarrhœa and dementia accompanying. The established eruption of pellagra once seen cannot readily be forgotten.

HANDS AND FINGERS

The nature of employment may be gleaned

Fig. 3 Fig. 4 Fig. 5

Fig. 3.—Raynaud's disease: showing multiple dry ulcerations and loss of finger ends by gangrene. **Fig. 4.**—Von Recklinghausen's disease (multiple neurofibromatosis) showing tumours, with round and oval café-au-lait patches here and there. **Fig. 5.**—Hæmochromatosis in a single girl aged 19, showing uniform dark pigmentation with atrophodermia of the face (*Brit. M. J.*, April, 1934).

In scabietic lesions, which may be few or many on the flexor wrists and elsewhere, some care has to be exercised in avoiding the mistake of diagnosing nephritis from the albuminuria accompanying, without admitting scabies as the cause. Besides scabies, local infections of the skin as furunculosis and acute contagious impetigo are known to give rise to visceral disease and nephritis.

In factitious dermatitis, the damage is done to the skin of the neck or arms or hands. Occurring as it usually does in the young woman, she does not mutilate the face, in her hysteria choosing to injure an area of skin which for the time being is anæsthetic. The management of this kind of patient is for the practitioner acting

from the state of the skin of palms and fingers, *e.g.*, the harpist and the fiddler display callosities on the finger tips. Disease produces certain signs which signify its character: clubbing of fingers and toes will uncover one from a number of possible causes: congenital heart disease; mediastinal newgrowth; fibroid lung; pulmonary phthisis; missed empyema; bronchiectasis. In this last, the clubbing is of the drumstick variety.

Huge clumsy clubbed fingers and toes with enlargement of the adjacent ends of the long bones identify hypertrophic pulmonary osteoarthropathy, and give early warning of steadily progressive disease in the lung.

Arthropathia psoriatica is a well recognized accompaniment of intractable psoriasis, usually inclined to diminish, even to disappear, when the eruption clears away.

Osler nodes are symbolic of subacute infective endocarditis; painless whitlow (Morvan's disease), leading to necrosis of the phalanges, is a sure and certain sign of syringomyelia; acrocyanosis of the fingers is seen in girls with poor stagnant circulation there who are insufficiently clad; the condition is physical, not trophic; and ulcers on the points of the fingers and of the toes spell Raynaud's disease, actual gangrene with the loss of the finger ends being an extreme degree of the same condition (Fig. 3). Each sign named marks the particular disease.

Carotinæmia excites yellow palms in the diabetic indulging in a large vegetable diet. The "raw beef" palms and soles in an abjectly miserable child who constantly burrows a small nose into the pillow, is caused by Pink disease and no other.

The finger nail-plates register Beau's lines, transverse grooving across each, about the same level, the result of an acute illness of severity which itself can be timed backwards within the five months required by the nails to grow to full length. In koilonychia (spoon nail) is true evidence of a simple achlorhydric anæmia; if the eyes will see this deformity, the cause is disclosed at sight.

THE THORACIC SKIN

The map-like seborrhœic eczema of yellow-brown greasy patches about the mid-line of the chest, front and back, dubbed "flannel rash", is not so common now that flannel is not worn; nor is the brown pityriasis versicolor which grows across the surface of the chest and on the back, a one-time common eruption in the phthisical. Both conditions were disposed to by woollen underclothing, too seldom changed, coupled with lazy lack of soap and water washing.

Pityriasis rosea is in a different category altogether: this "vest area eruption" of pale red scaling patches, flowers on the skin about a week after the oval so-called herald patch or medallion first appears; and though thus peeling and not occurring on face or hands, is more often mistaken for a secondary syphilide than any other. Pityriasis rosea should be grouped with the exanthemata as one of them.

Single petechiæ here and there, or many in areas stippled with these, confirm the presence of acute infective endocarditis. De Morgan spots, solitary angiomas, widely dispersed on chest and abdomen in persons of the cancer age, are not as was formerly thought caused by malignant disease.

Preceded by neuralgic pain, herpes zoster appears as a broken crop of vesicles on an erythematous base along the area of supply of a cutaneous nerve, this last entering a spinal segment whose posterior nerve root, and that immediately above and below, is in a state of hæmorrhagic inflammation. Generalized herpes is rare: the relation of herpes zoster to chicken-pox is well known; the latter erupts twenty-one days after contagion by the former; the reverse, if it occurs, I myself have not found to happen.

A few oval café-au-lait patches interspersed amongst fibromata in the skin mean one disease only, namely: Von Recklinghausen's neurofibromatosis which is, as a rule, associated with a feeble intellect and is familial (Fig. 4).

A crop of tortuous distended surface arteries in the interscapular region indicates co-arctation of the aorta.

In a man of 40, I have seen a small fixed marble-sized lump of recent appearance, under the left brace, on the back, with venules coursing over it, found on excision and section to be a small round-cell sarcoma; followed after two months by a large secondary similar tumour in the right antrum of Highmore overflowing into the right pharynx, and disappearing under radium. This growth, in its turn, was followed by deepening jaundice and deposits in the liver that destroyed the patient three months later.

Open and palpable is a general carcinomatosis of the skin secondary to an internal carcinoma. The multiple small tumours are metastatic; the primary source abdominal; the site of eruption, the skin of the trunk.

THE ABDOMEN

In the infant, peristalsis alone will affirm the case as one of hypertrophic pyloric stenosis; in the elderly, visible bowel patterns localize an obstruction, yet indicate that the patient is probably beyond all human aid, surgical or other.

A scanty eruption of rose-pink papules appearing on the upper abdomen after seven days of rising fever denotes typhoid; these occur in fresh crops every three days. Paratyphoid-B

fever often shows many papules, the area of distribution extending upwards on to the sides of the chest and down over the hips, a rash more profuse than in typhoid proper which itself, even in a severe case, may have no rash at all, or a dozen papules to constitute a plentiful eruption.

Urticaria is the outward and visible sign of a sensitization to one of several known drugs, to a foreign protein, or to some physical agent or airborne fibre. After all, the alimentary tract is directly continuous with the skin. Besides urticaria, alimentary anaphylaxis is known to give rise to other various reactions in the skin such as angioneurotic œdema, eczema, prurigo. The "enema rash" occurring over the buttocks and round the lower abdomen is reactional, due to toxic cause.

Henoch's purpura in childhood is accompanied by persistent vomiting and abdominal signs that may mimic intestinal obstruction and mislead to laparotomy. In smallpox, the plum-coloured prodromal macular rash of triangular distribution, with base across the hypogastrium and apex between the thighs, diagnoses the disease beyond all doubt—an ugly rash, readily overlooked if unexpected, proof of a disfiguring, mortal contagion.

The pigmentation of Addison's disease, of dark brown colour, is laid down not only in the buccal mucosa, but also in the face and backs of hands, and in those situations where the skin is naturally pigmented, as well as at points of pressure such as the waist line and the garter line. That of argyria, less often seen now than formerly, is a uniform dark discoloration of the skin; that of hæmochromatosis (Fig. 5), a slate-grey pigmentation affecting face, axillæ and groins, not occurring in the mouth; that of acanthosis nigricans, a black-brown vegetative eruption having, when fully erupted, an appearance suggestive of a brown close-pile carpet in the axillæ, and about the umbilicus, anus and genitals, believed to be an associate of cancer in the abdomen when found in the adult, of tuberculosis when in the juvenile. Each of these conditions, by the character and distribution of the pigment deposited, with accompanying confirmatory signs, will declare its own name and origin.

A universal pruritus without marking in the skin is frequent after the seventh decade, more so about the age of 80 years and over, and is ascribable to faulty liver chemistry or to senile atrophy of the skin itself. In the rare few, the cause may lie in a ruptured hydatid cyst which, by the way, evokes at the time a massive eosinophilia, a ready pointer to the correct diagnosis.

THE LEGS

In examining legs and feet, function as well as structure has to be investigated. Two diseases may give early warning of their presence: paralysis agitans by rigidity*; and senile paraplegia, after the age of 60 years, by a growing awareness as well as display of loss of power in the lower limbs and an infirm, shuffling gait with shortened step and slowed pace.

During summer and autumn an insect bite, identified by its singleness and central puncture, can give rise to sensitivity. At the other end of the scale, tell-tale small round white sharply outlined scars in the leg, surrounded by a wide dark-brown pigmentation, offers evidence of past active syphilis. And so indeed are some varicose ulcers in part syphilitic; surprisingly many patients with these show positive Kahn and Wassermann reactions.

Purpuric spots on the legs not infrequently occur in chronic interstitial nephritis; they presage uræmia. Erythema nodosum in the legs indicates contagion by a shower of tubercle bacilli, half fought and resisted for the time being; it would be correct to group this disease with the tuberculides, as is now usually done. The toxic erythemata erupting about the joints are not itchy, unless taking the form of an urticaria which itself always induces much itching. Both, however, do not persist for long: they fade in days, needing little treatment; and produce no joint pains of note. They afford evidence of autointoxication or of autoinfection. Schönlein's purpura is allergic, usually erupting on the extensor aspects of the legs in the young adult male, accompanied by sharp joint pains. Purpuric spots about the hair follicles, with extravasation of blood into and under the skin, and spongy gums that bleed readily—these, along with resulting anæmia, attest "land scurvy". In many years I have found this condition only rarely, in the helpless elderly who have been content to live

*This I have seen demonstrated in a soldier who, standing in the ranks with rifle at the "slope", on the command "about turn" would, in his welding rigidity, unwittingly club his serried neighbours to the loudly expressed protest, couched mostly in unparliamentary language, of all concerned. (S.W.S.)

too long on tea, bread and margarine to the exclusion of all else.

The coarsely scaling, pallid non-pitting œdematous skin of legs and feet, seen in older persons, signifies hypothyroidism.

THE FOOT

The congested, very painful foot with turgid vessels that stand out on the surface during attacks characterizes erythromelalgia. Gangrene of toe or foot is met with to indicate an advanced peripheral arteriosclerosis or, in diabetes mellitus, the Mönckeberg variety of arterial degeneration. A perforating trophic ulcer of the foot, under the ball or the metatarso-phalangeal joint of the great toe, may be trophic alone or disposed to by tabes dorsalis, excited by the pressure of boot or shoe.

CONCLUSION

The various signs mentioned, being objective, are clear and unequivocal, each narrowing the diagnostic field to the one case in point, identifiable almost at a glance. In bedside diagnosis, a dozen probabilities brought to mind do not make one truth, nor many symptoms a sign. What is coldly logical is at all times to be adhered to, never what is thoughtlessly imaginative. The commonplace is to be looked for first; with an unprejudiced mind, the isolated cause and single disease is to be sought for.

In times past, the pictorial art has been made too little use of in medical literature. The practitioner as photographer can turn the camera on the signs seen as well as upon movements in disease. "The pictures for the page atone"; not to reproduce a good photograph is to cast a pearl away. It is likely that perfected colour photography will be pressed into service in the future. The artfully prepared, tinted wax cast, selecting characteristic details as it does, presents to the mind's eye a more lasting lifelike image, an equivalent reality; the greater the fidelity, the greater will be the merit of the representation. The photograph is colourless, not to be compared with a vivid portrait; the first simply personates the other. Each, of course, illustrates only a momentary static incident in the progress of the patient.

In any case, better a picture than a thousand words; moreover, good pen portraiture is the gift of the very few. In practice, no storied chronicle can match any of the three in engaging and holding the interested attention, or in conjuring up in mental imagery, even if within more limited scope, the patient with all his woes even long after. The printed word can be tedious and laborious and less transparent in use because of the different ways minds look at things and the different meanings taken out of them; a picture-portrait never can be equivocal. An ancient Scottish proverb: "Words are but wind, but seeing is believing" is apposite in this connection; indeed, the physician possessed of the photographic memory has need of few words.

Surface signs, if thought to be innumerable are not unnumbered; most are capable of study not only in real life to secure "truth of kind", but also in graphic representation; many being of value in daily diagnosis, given time and experience and the photographic eye, will be visualized then memorized with thought for future needs. There is more than a modicum of truth in the saying that "years know more than books."

RESULTS OF A RANDOM CHEST X-RAY SURVEY OF HEALTHY TROOPS IN CANADA

By Lieut.-Col. R. W. Boyd, R.C.A.M.C.

Ottawa

THE value of the enlistment chest radiograph of service personnel is well known. Early tuberculosis, other infiltrations and cardiac disease have been recognized. The tuberculosis rate of the armed forces has been kept at a minimum and the control of tuberculosis in the civilian population has been facilitated.

During 1944, the incidence of tuberculosis was found to be rising in the Canadian Army Overseas, although no corresponding increase was detected in troops remaining in Canada. In order to estimate the incidence of early or subclinical tuberculosis and to forecast the number of cases of tuberculosis arising among the troops in Canada upon demobilization, it was decided to conduct a "random" or "spot" chest x-ray survey of healthy military personnel serving in Canada.

More than 5,000 soldiers were selected for x-ray examination. Each Military District was given a quota in proportion to its troop population. Soldiers were selected who were under

35 years of age, had served in Canada continually for 18 months or more, and had not received a chest x-ray examination during this period. These individuals were chosen at random from the various units, barracks and training centres of home war establishments. Many were of low category but none was considered to have active chest disease. Each was apparently healthy and capable of carrying out his daily job satisfactorily.

Single 14" x 17" films were taken. Most of the radiography was conducted in Army Reception Centres. Films were interpreted by local military radiologists and were again reviewed by one radiologist at National Defence Headquarters. More than 300 enlistment films were withdrawn from the files and compared with survey films. Films, which in the opinion of the reviewing radiologist showed significant findings, were returned to their local unit for further clinical and radiological study of the individual concerned.

The findings of the chest survey are tabulated below:

Total examined	5,200
Active pulmonary tuberculosis	3
Suspected minimal tuberculosis:	
(*a*) No disease found after 4 months' follow-up	4
(*b*) Continuing under further periodic observation	4
Fibrotic or semi-calcific lesions present at enlistment:	
(*a*) Showing no change	28
(*b*) Showing further resolution or healing	6
Gross hilar or parenchymal (Ghon) calcification	59
Sub-acute non-tuberculosis pleurisy	1
Pleural thickening and adhesions:	
(*a*) Diaphragmatic, sulcus obliteration	106
(*b*) Apical	4
(*c*) Interlobar	4
Progressive heart disease	2
Atypical pneumonitis or basal infection	4
Pneumothorax, spontaneous	1
Eventration of diaphragm	1
Residual lipiodol	2

Of the three cases of active tuberculosis, two were moderately advanced with cavity formation. The third had minimal disease requiring sanatorium care. The enlistment film was normal in each case. These soldiers had been in the service for more than two years and had considered themselves well. The two advanced cases had been complaining only of excessive cough from four to six months (Figs. 1, 2, and 3).

The eight minimal tuberculous suspects were subjected to repeated physical and x-ray examination while carrying on with their regular duties. Some have proceeded overseas. Their survey films showed small, patchy shadows in the lung fields which were not apparent in enlistment films. After four months, active disease had been ruled out in four individuals while the four others were still under periodic observation. It is considered unlikely that the latter soldiers will be rendered unfit or lowered in category because of the radiological findings. The suspicious shadows probably represented small areas of pneumonic infiltration, local collection of exaggerated vascular markings or pleural thickening.

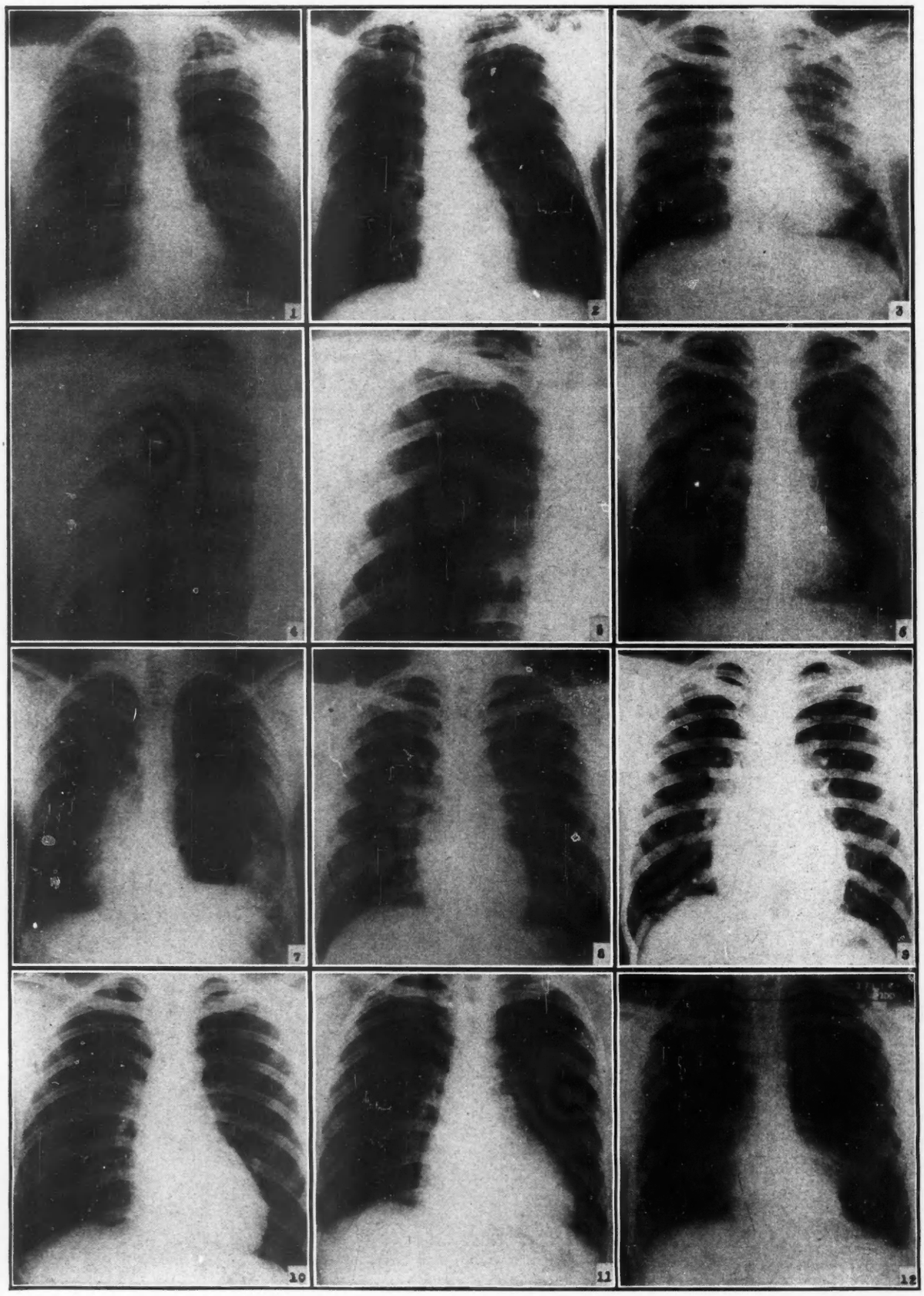
Six individuals showed solitary, so-called healed tuberculous lesions ranging from small, soft, fibrotic nodes to large fibrocalcified shadows. These were present on enlistment films but showed signs suggesting intervening resolution, further fibrosis, or healing since enlistment. It would appear that, in spite of arduous training and employment, small, minimal or questionable lesions in individuals classified by examining physicians as "fit" on enlistment, do not become activated during service. No deterioration of healed or fibrotic type of lesion was noted in this group (Figs. 4 and 5).

Two soldiers presented small patchy shadows suggestive of atypical pneumonitis. Both were found to have upper respiratory infections or "colds" existing immediately before or during the x-ray examination.

Eventration of the diaphragm was noted in one case (Fig. 7). It was present at enlistment, was pronounced yet did not handicap the soldier's training or duties. Progressive cardiac disease was discovered in two cases (Figs. 8 to 11), and spontaneous pneumothorax in one (Fig. 12).

If the findings of the random survey were applicable to the incidence of hidden or unrecognized tuberculosis in the Army in Canada, a rate of considerably less than one per 1,000 may be arrived at. The incidence of non-tuberculous chest disease appears to be somewhat high and variable in this survey. The relatively small cost of film and labour involved in such a survey is out of all proportion to that which would occur if the disease in the individuals concerned had remained unrecognized until they presented themselves voluntarily to their medical officer.

Mass chest x-ray survey of the general population, industries, schools and local communities, etc., are playing an important part in the prevention and early detection of chest disease.



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The findings of the routine random survey indicates the value of re-surveying "normal" individuals at periodic intervals. Seven cases of significant disease requiring active treatment were detected in this survey. The group concerned was one which receives careful periodic and closely supervised medical attention. The value of similar periodic survey in the general population would be correspondingly greater.

CONCLUSIONS

1. The results of a random chest x-ray survey of soldiers serving in Canada are reported.
2. The incidence of unrecognized tuberculosis as shown by the survey is less than 1 per 1,000.
3. Findings indicate the need for periodic re-survey of individuals.
4. There was no evidence found to indicate that minimal healed lesions, or primary complexes which are not completely calcified radiologically, become aggravated as a result of military service.

FORWARD ABDOMINAL SURGERY

(An Analysis of 230 Cases)

By Major R. B. Eaton, R.C.A.M.C.

No. 5 Canadian Field Surgical Unit

IT is the purpose of this paper to relate my personal experiences, observations, and lessons learned while working with a Forward Surgical Unit (F.S.U.) at Advance Surgical Centre (A.S.C.) level. This covers a period of nearly 10 months during the north west European campaign beginning in Normandy and finishing in north west Germany and Holland. During this period our work was done with an F.D.S. or C.C.S., forming the parent unit of the A.S.C. Except for about two months during the fall and winter when all fronts were quiet and more or less static, we dealt with priority I and II cases only. In all, this unit operated on nearly 300 cases of which over 200 were battle casualty abdomens, giving one some idea of the severity of the cases encountered. Many cases had multiple injuries and often abdominal injury was only part of the major problem to cope with. Even in times of stress no abdominal case was considered as hopeless until a laparotomy was performed, even though response to resuscitation was not good.

At no time did we use nursing sisters in our operating room set-up, but found them most essential for supervision of our postoperative care. On several occasions this unit worked at an F.D.S. without the aid of Sisters, but the extra burden thrown upon the F.S.U. officers was more than could be expected after a busy period in the operating room. In spite of this the cases did fairly well but lacked the comforts of the "feminine touch".

The table shown indicates the type of case dealt with and the frequency of the various organs involved. The mortality figures are based on our follow-up in the forward area, *i.e.*, the majority were followed for 10 to 12 days before evacuation to base. Many of these cases had multiple injuries and in a few, the abdominal injury was probably the less serious.

Fig. 1.—Sgt. F.Z., aged 32. Minimal tuberculosis in left apex. **Fig. 2.**—Pte. E.G., aged 34. Pulmonary tuberculosis in left apex with a cavity behind anterior end of first left rib. **Fig. 3.**—Pte. G.I., aged 22. Moderately advanced left pulmonary tuberculosis with cavity. He attributed a 2 months' cough to cigarettes and garage fumes. **Fig. 4.**—Pte. A.L., aged 31. Enlistment film, November, 1942, showing soft shadow in second right interspace. Missed by reviewing radiologist. **Fig. 5.**—Pte. A.L. Survey November, 1944. No symptoms. Lesion noted in Fig. 4 has become organized and fibrotic during two years' service. **Fig. 6.**—Sgt. B.B., aged 21. Pleural thickening left lower axillary wall. Enlistment film normal. Recurrent attacks of left chest pain for 10 months. Mantoux and sputum tests normal. Slight elevation of temperature on admission to hospital. Rapid resolution followed two weeks' bed rest. **Fig. 7.**—Cpl. L.E., aged 29. Eventration of left diaphragm. No change since enlistment June, 1942. Was able to undergo strenuous training until injurying heel on assault course. No symptoms. **Fig. 8.**—Lieut. W.M., aged 22. Enlistment film July, 1941, showing slight bulging of conus shadow without general enlargement. No symptoms. Had soft basal and apical systolic murmur. Considered by consultants to be a probable interventricular septal defect and placed in a low category. **Fig. 9.**—Same individual as Fig. 8. Survey film of September, 1944, shows increased heart size. Now has dyspnœa on ordinary exertion with cyanosis of fingers which show some clubbing. Auscultatory signs unchanged. Recommended for discharge. **Fig. 10.**—Pte. W.R., aged 23. Enlistment film November, 1941. Heart shows moderate left sided enlargement. Old right empyema. Film read "negative". Enlisted in low category as a clerk. Had rheumatic fever in 1936. **Fig. 11.**—Same individual as Fig. 10. Film taken September, 1944, showing marked cardiac enlargement in three year period. Complaining of some retro-sternal "burning". No dyspnœa. Examination shows soft blowing diastolic murmur in 5th interspace to left of sternum with short systolic murmur in aortic area. Diagnosis, rheumatic carditis. Unfit for military service. **Fig. 12.**—Sgt. B.P., aged 24. Left spontaneous pneumothorax. Had been feeling poorly for several days, thinking that he had pleurisy but did not report to medical officer. Examination February, 1945, after bed rest showed complete expansion with no evidence of active pulmonary disease.

TABLE

CLASSIFICATION OF CASES

	Number	*Deaths*	*Mortality*
			%
Total abdomens	230	38	16.9
1. Acute abdomens (4 accidental, 3 intestinal obstructions, 2 perforated peptic ulcers and 12 appendicitis)	21	1*	4.8
2. Battle casualty abdomens	209	37	17.7
(*a*) Penetrating abdomens	129	20	15.5
(*b*) Non-penetrating abdomens	45	3	6.7
(*c*) Thoraco-abdominal	35	14	40.0
(*d*) Organs involved (with definite lesions)			
1. Liver	35		
2. Kidneys	28		
3. Spleen	24		
4. Pancreas	7		
5. Stomach	31		
6. Small intestine	75		
7. Large intestine	74		
8. Rectum	23		
9. Gall bladder	3		
10. Bladder	7		
11. Urethra	10		

*This was an accidental case with multiple injuries (closed head injury, fracture of femur and humerus, a ruptured spleen and diaphragm). He died on the 3rd day of massive left pulmonary collapse due to herniation of the stomach through a tear in the diaphragm which was probably missed at the abdominal operation.

Resuscitation.—Time and distance to operation, together with the extent and site of the injuries were the most important factors determining a successful outcome. For the abdominal case the optimum time limit should not exceed 6 to 8 hours and the distance not more than 10 to 15 miles. There were exceptions to this rule but on the whole cases did badly if they exceeded these figures.

The main responsibility for resuscitation rested with the transfusion officer working at the A.S.C. During busy periods the surgeons came to rely more and more upon the judgment of the F.T.U. officer in sorting and final assessment of cases for operation. This unit was fortunate during the whole campaign in working with two very competent F.T.U. officers (Capts. T. Wilson and A. Gold of No. 4 and 7 F.T.U.'s respectively).

Cases with abdominal eviscerations, thoraco-abdominals, and abdominals with gross hæmorrhage required rapid transfusion. On the average 2 to 4 pints of blood and one of plasma sufficed before they were taken to the operating room. All were taken to operation with a blood transfusion running. We depended a great deal upon pulse volume and the restoration of the peripheral circulation as guiding signs *re* fitness for operation. Of course the blood pressure was always taken and rechecked, but in many instances of severe abdominal wounds it was difficult to raise the blood pressure above 80 to 90 mm. Hg. If they showed no further progress than this they were taken to the operating room at this stage, for the optimum time had arrived. To go on trying to raise the blood pressure was not only futile but once patients had been resuscitated to this level, delay was only asking for trouble. These cases do not respond to a second resuscitation. It was most dramatic to see how these cases improved on the operating table, *i.e.*, when hæmorrhage had been controlled and the handling of the gut had stopped.

Anæsthesia.—Preoperative sedation was usually with a moderate dose of omnopon and scopolamine or morphine and atropine intravenously. If the cases had recent morphine only atropine or scopolamine was given. The majority of cases were induced with ethyl chloride or pentothal, then switching over to warm ether from the Oxford vaporizer. A few cases were done using pentothal alone but this procedure is to be condemned as it is not only risky but adequate relaxation is difficult to obtain, especially in upper abdominal lesions. Most abdominals stand deep anæsthesia well, and sufficient depth during closure of the abdominal wall is most important. One can work faster, and there is less trauma to the patient.

Had cyclopropane been available I believe it would have been a great aid especially in thoraco-abdominal cases. In most instances oxygen was administered if signs of anoxæmia were present. Intratracheal intubation had a definite advantage, particularly in thoraco-abdominals of the left side where the stomach had herniated into the pleural cavity. If the tube is packed off around the larynx aspiration asphyxia from regurgitation of the stomach contents is prevented, as the stomach is reduced into the abdominal cavity. A useful "dodge" in such cases where the stomach is full, is aspiration with a syringe and needle before reduction. This not only prevents regurgitation but facilitates reduction and repair of the diaphragm.

Diagnosis.—As a general rule this did not present many difficulties as it was usually obvious and clear-cut. It is essential to make a general survey and assessment of the patient's condition and of the number of wounds present. One should always examine for the entry and exit wounds and try to visualize and decide what organs the missile had traversed. This is also

important when planning one's incision. Audible peristalsis usually means that there is no intraperitoneal lesion; however, there are exceptions to this rule especially in flank wounds where there is a simple lesion of the colon. Furthermore it does not rule out lesions to the extraperitoneal viscera.

Severe chest wounds often refer signs to the abdomen but usually after a period of resuscitation and rest the abdominal signs abate and the patient's condition improves. In injuries limited to the chest the abdominal rigidity is unilateral and the breathing is abdominothoracic. X-ray has been advantageous in a few cases, particularly of the thoraco-abdominal type. While working with an F.D.S. x-ray was not available and it is probable that it would have not been very helpful in most instances.

When in doubt I have always performed an exploratory laparotomy and I have never regretted this procedure. It takes little time, does the patient little harm and puts the surgeon's mind at rest.

OPERATIVE TECHNIQUE

Incision. — The type of incision should be planned to meet the requirements of the individual case, *i.e.*, the exposure should be over the site of the lesions. In many cases the recognized orthodox incisions such as the right and left rectus splitting and the mid line serve adequately. However they are often impracticable and unsuitable for the surgery required. I have used the flank or transverse muscle cutting incision (from the outer border of the erector spinæ to the rectus muscle) on many occasions and have found it most useful, particularly where the kidneys were involved. In some cases one can first deal with the extraperitoneal lesion and later explore the abdominal cavity through a small opening in the peritoneum. Flank incisions are also designed to facilitate good drainage of the right or left paracolic gutters. When there was an evisceration of gut I have often extended the wound in either direction and later repaired the wound after removing the devitalized tissue.

For perforating types of thoraco-abdominal wounds particularly if there was considerable chest wall damage and a possible sucking wound, I have used a thoracotomy incision, excising one of the ribs. The pleural cavity and chest wall can be adequately repaired and furthermore, and most important, the abdominal contents can be more readily dealt with and reduced. It gives an excellent exposure for repair of the diaphragm. In a few instances the abdominal incision was carried upwards beyond the costal margin, cutting through it, and reflecting it aside. This gives a good exposure to the diaphragm, liver and cardia of the stomach. A transverse lateral extension to any longitudinal abdominal incision is sometimes required.

For rectal injuries, particularly in cases with gross contamination of the buttock and perineal wounds it is wise to be radical, excise the coccyx and expose the rectum to above the lesion. The pararectal tissues should be drained freely. The rectal lesion should be repaired and a colostomy performed above.

Large bowel.—The standard procedure for all large bowel lesions is exteriorization after free mobilization of the loop. In the left colon a spur is usually feasible but it should not be made too long (2 in.). One of my cases obstructed from kinking of the proximal segment and I am sure this might have been prevented had the spur been shorter or even not attempted. The right colon presents a more complex problem and in many cases it is probably best to simply exteriorize the tear. When the cæcum or ascending colon have been involved I have on several occasions sutured the tear in two layers and performed a short circuit operation (ileo-transverse colostomy). This is particularly valuable when the pelvis is fractured. A subsequent osteomyelitis is thereby prevented. In a few extraperitoneal tears of the right colon I have sutured the bowel and inserted a drain to the suture line.

Where there are multiple perforations of the large bowel it is safe to suture the distal ones performing a colostomy at the proximal tear. Lacerations of the pelvi-rectal colon should be sutured, performing a safety colostomy above. A right hemicolectomy is seldom required and should only be done if the right colon is riddled with tears. It is probably best to exteriorize the whole loop after doing an ileo-transverse colostomy.

Drainage.—At this stage it is fitting to discuss drainage. In all cases of large bowel contamination the peritoneal cavity should be drained. This is best done through the posterior end of the flank incision, or a separate small incision to the paracolic gutter, or through an entry or exit wound if suitably placed. In cases of gross small bowel injuries and severe liver

lacerations it is wiser to drain. In spite of our "panacea" of penicillin and sulfa drugs, surgery must be adequate and many complications are prevented by good drainage. A safe axiom is "when in doubt, drain".

Small intestine.—If possible it is probably wiser to suture small intestine lacerations. When perforations are multiple and involve the mesentery, resection is usually required. In many instances I have performed a long resection in preference to several resections and sutures. During this campaign I performed resections in 40 cases and simple suture in 43, the two procedures usually being combined. In this series there were two successful triple resections and four double resections of the small intestine. I did a quadruple resection on a P.O.W., with other concomitant injuries, unsuccessfully. Some of the cases had in addition large bowel or solid visceral injuries, or a combination of all three. My longest successful small bowel resection was 7½ feet, there was also a perforation of the cæcum, descending colon, and a tear of the pelvi-rectal junction. Five other resections were 5 feet or over.

It has been my practice to do an end-to-end anastomosis using a continuous suture in two layers, beginning with an inverted mattress suture at the mesenteric angle. The suture line may then be reinforced with a few interrupted stitches (Fig. 1).

I have performed a "pull through" anastomosis, *i.e.*, by denuding the mesentery from the proximal segment for about one inch, inserting three stay sutures through all layers in the end of the bowel, telescoping it into the distal end, and bringing the stay sutures through over the serosa of the distal segment. The free end of the distal segment is then sutured to the serosal and the muscular coats of the proximal segment. The denuded telescoped proximal end eventually sloughs off inside the bowel (Major Pringle, R.A.M.C.). However I cannot say that this method has any advantage nor is it quicker (Fig. 2).

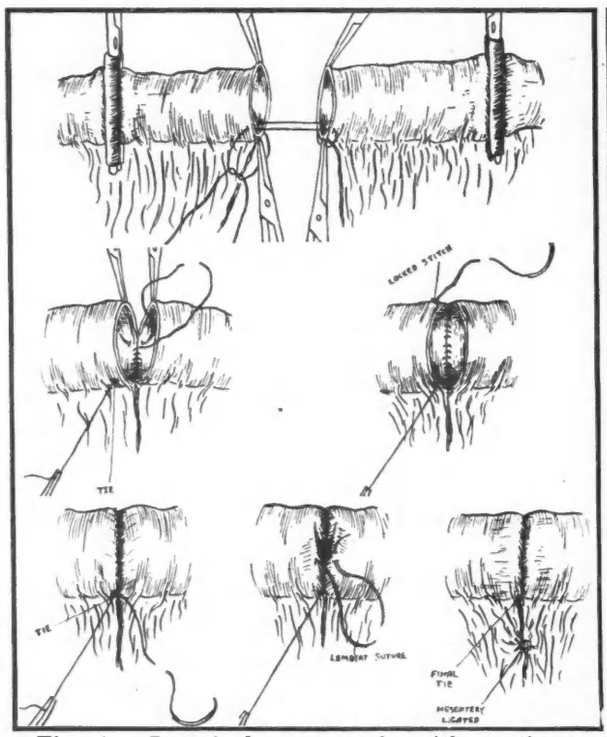

Fig. 1.—Intestinal anastomosis with continuous single suture in two layers.

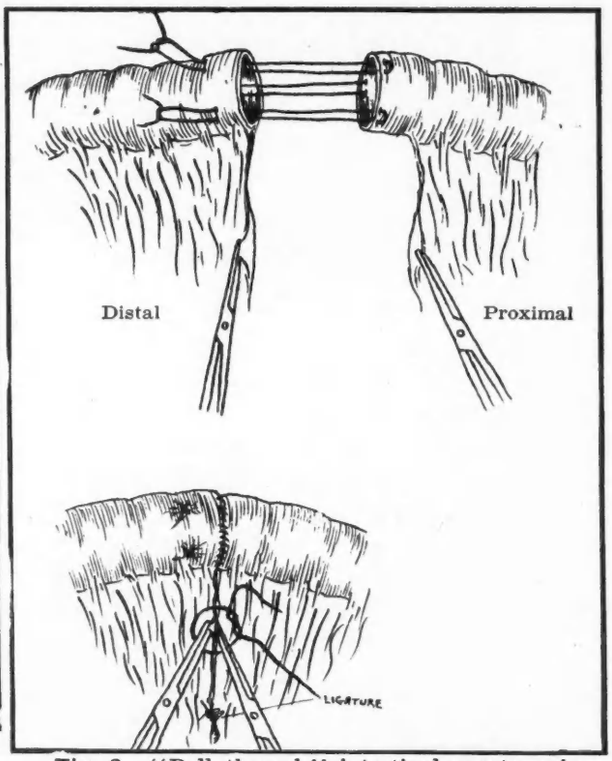

Fig. 2.—"Pull through" intestinal anastomosis.

Free margins of mesenteric tears should be picked up with fine snaps, their ends approximated and ligatured with fine linen, rather than stitched. Lesions of the 1st and 2nd parts of the duodenum are best exposed by reflecting the hepatic flexure inwards. Should there be much narrowing of the duodenum it is probably best to do a posterior gastro-enterostomy.

Stomach.—Tears should be sutured in two layers with strong chromic cat gut, preferably No. 0 or No. 1. One must not hesitate to explore an anterior tear for a posterior wall lesion. If in doubt it is best to open the lesser sac and

look. Wounds of the cardia may require an extension of the skin incision upwards even cutting through the costal margin.

Liver.—Bleeding from liver lacerations can usually be controlled by first putting a chain of interlocking deep sutures along each side of the tear and parallel to the edges. The gap is then brought together by deep interrupted sutures which include the parallel lines of sutures. Plain No. 2 cat gut on a large round bodied fully curved needle should be used. Large denuded areas on the liver margins with loss of liver substance can be controlled by deep mattress sutures and further covered by a leaf of omental tissue. Bleeding is arrested and healing promoted with a minimum of bile secretion from the raw surface of the liver. Rarely is gauze packing required but it is best to insert a drain to the damaged area. Small lacerations where bleeding has stopped require no suture (Fig. 3).

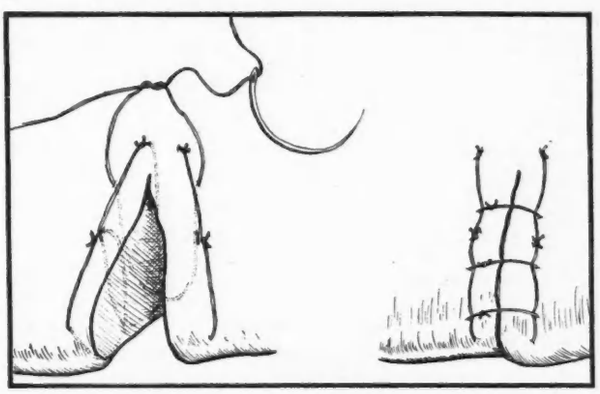

Fig. 3.—Standard method of liver suture (G.G.T.).

Spleen.—Most lesions of the spleen call for a splenectomy. This is easily done through a left transverse flank cutting incision. In cases where the spleen has herniated into the left pleural cavity through a tear in the diaphragm, a thoracotomy incision through the left lower chest resecting the 9th rib gives an excellent exposure.

Kidneys.—If the kidney pedicle, ureter, or at least half of the kidney substance is involved, it is safer to do a nephrectomy. Should the 12th rib be fractured, it is best removed. Furthermore should there be a concomitant lesion to the overlying large bowel it is best removed.

Pancreas.—Most wounds of the pancreas are mortal. Tears should be sutured with cat gut and a gauze drain inserted to the suture line. In one case I removed the tail of the pancreas together with the spleen and covered the stump with omentum, bringing a drain out through the left flank with good results.

Gall bladder.—When the gall bladder is torn it is better to suture and drain. One occasion I did a cholecystectomy and in another sutured the common bile duct inserting a drain to the suture line.

Bladder.—All tears should be sutured in two layers from the outside if possible. A suprapubic cystotomy is then done and it is best to bring the suprapubic tube out through a separate incision high on the fundus. Chromic cat gut should be used throughout. In all cases a drain must be inserted to the space of Retzius.

Urethra.—The urethra was repaired on 7 occasions over an indwelling catheter which was left *in situ* 5 to 7 days. A drain should be inserted to the site of the lesion. A suprapubic cystotomy should always be performed.

Wound toilet.—It is most important in war surgery of the abdomen to make quick decisions, explore hurriedly but systematically, and get on with the job. A point well worth stressing is careful peritoneal toilet. A few minutes spent sucking out spilled intestinal contents and old blood is not wasted.

During the latter half of the campaign I used as a routine 5 gm. sulfadiazine (microcrystalline) in 50 c.c. of a special wetting solution intraperitoneally, before closing the peritoneum. I am not yet convinced of its value even though the mortality rate was less during the last quarter. It causes considerable peritoneal irritation and cases are more liable to develop adhesions and subsequent intestinal obstruction, which occurred in two cases.

Wound closure.—This is very important. The peritoneum should be closed with a continuous No. 2 or No. 3 chromic cat gut and reinforced if necessary with interrupted sutures. The rest of the wound should be closed in layers using interrupted No. 3 chromic cat gut for the fascial and muscular planes and linen or cotton thread for the skin. Where there was much peritoneal soiling or a colostomy was brought out in the incision, through and through linen or S.W.G. was used, including all layers, in conjunction with the above method.

As a routine all incisional wounds were dusted with sulfathiazole-penicillin powder before closing the skin. Elastoplast strapping was used for all dressings with air vents cut through the tape to prevent the wounds from becoming moist and soggy.

Drains were removed on the 2nd to the 4th day and dressings changed once before evacuation, or more frequently, if a colostomy had been performed.

POSTOPERATIVE TREATMENT

The after care of patients with abdominal wounds is important, for early evacuation before they have established equilibrium is fatal. On the average they were held for 10 to 12 days. In most instances we had nursing sisters for the supervision of this treatment. Nursing orderlies do a grand job but the patients seem to do better both practically and psychologically when Sisters were there.

The following routine was established for all of our postoperative abdominal cases:

1. All patients were taken from the operating table with the intravenous drip running and an airway *in situ*.
2. Cases were nursed on their affected side with the foot of the bed raised until out of anæsthesia.
3. Morphine gr. 1/6 to 1/4 was given P.R.N. for the first 48 hours.
4. All cases with gross soft tissue damage especially buttock and back wounds were given postoperative prophylactic doses of A.G.G.S.
5. Continued resuscitation with blood and plasma was often required in serious cases.
6. Continuous gastric suction by syphonage was maintained until peristalsis had returned and flatus passed.
7. Continuous intravenous 5% glucose saline, 4 to 6 pints, plus 2 pints of plasma were administered daily.
8. Penicillin 100,000 units in one pint of saline per 24 hr. were given by continuous intramuscular drip. The bottle was graduated at 2 hourly intervals. The intramuscular needle was inserted in the anterior or lateral aspect of the thigh and the site changed every 48 hours.
9. Sulfathiazole or sulfadiazine gm. 1 q.4.h. was administered intravenously in all cases with large bowel lesions or suspected chest complications.
10. Immediate postoperative chest aspiration and follow-up was carried out on all thoraco-abdominal or independent hæmothoraces. Intrapleural penicillin 50,000 units in 10 to 20 c.c. of water was injected after each aspiration.
11. Patients were nursed flat on their backs for the first 48 hours and thereafter assumed the position of most comfort.
12. Except where a colostomy had been performed dressings were changed only once before evacuation.
13. Drains were removed in 48 to 72 hours.
14. Sutures were left in position for evacuation.

COMPLICATIONS

Burst abdomen.—Wound infection was rare. Two consecutive cases eviscerated on the 5th and 7th day respectively. This I attributed to faulty technique or defective suture material.

Acute intestinal obstruction.—Two cases developed acute obstruction. Both were large bowel lesions and intraperitoneal sulfadiazine had been employed. One case died from spinal shock after a spinal anæsthetic had been given for the second operation. (Spinal anæsthesia has been condemned in forward war surgery).

Peritonitis.—As we understand it in civil practice was rare. I think most of these cases have some degree of peritonitis from absorption of spilled intestinal contents and blood, but in the majority this produces few clinical signs. Peristalsis usually returns on the 4th or 5th day. One case died of an acute abdominal crisis on the 5th day after apparent good progress. Post mortem was not performed but the most likely cause of death was rupture of a devitalized area of bowel or break-down of the suture line giving rise to a general peritonitis.

Pulmonary embolus.—One case died suddenly with clinical signs of pulmonary embolism. Autopsy failed to bear this out. He was found to have a large flabby heart but no definite macroscopic evidence of coronary disease. The peritoneum was clean but the stomach was dilated. This may have been a factor in spite of the fact that he had continuous gastric suction during his postoperative period.

Fat embolism.—One abdominal case with fractured pelvis died with clinical signs of fat embolism on the 6th day after making good progress.

Anuria.—Two cases died of toxæmia from anuria. In one, death occurred on the 9th day following severe injuries to the liver and right kidney. The liver had been sutured and a right nephrectomy performed. The second case died on the 3rd day but could not be classified as a true anuria since he never responded to resuscitation and went into irreversible shock.

CHEST COMPLICATIONS

Pneumonia.—One case, a late P.O.W. died of lobar pneumonia. He had signs in the chest before operation.

Pulmonary collapse.—Partial pulmonary collapse occurs in a fair proportion of cases, especially thoraco-abdominals but is usually not serious. One of my cases (accidental) died on the 3rd day postoperative of massive pulmonary collapse. This was due to herniation of the stomach into the pleural cavity through a ruptured or weakened diaphragm.

Empyema.—No cases of empyema were seen at this level, but one case (a thoraco-abdominal) developed it after evacuation. He eventually made a good recovery.

Acute pulmonary œdema.—This occurred in several abdominal cases but was usually associ-

ated with mine and high explosive injuries. There was probably an associated blast injury to the lungs. When œdema developed, it was treated with concentrated plasma or serum and a restriction of fluid intake. It was more prone to occur as a terminal event in severe chest injuries.

Fæcal fistula.—Fortunately this did not occur in my series of cases. However I did see it in two cases and had to cope with one. Either the suture line parted or a small tear or devitalized area of the bowel was missed at the original operation. It is a very serious complication in war surgery cases, and is usually fatal, death resulting from peritonitis and sepsis.

Aspiration asphyxia.—One case died of aspiration asphyxia on the table, due to regurgitation of stomach contents as the stomach was being reduced through the diaphragm.

Traumatic shock or toxæmia.—The majority of the fatalities occurred within 48 hours of operation and in most cases I suspected at the time of operation that the extent of tissue damage was too great for survival. Autopsies were performed in most cases but no other cause was revealed.

SUMMARY AND CONCLUSIONS

1. A total of 230 abdominal cases were operated on with a mortality of 16.9%. This was based on a follow-up from 10 to 12 days before evacuation.

2. No case that reached the A.S.C. was considered as hopeless until a laparotomy had been performed. Time and distance to operation definitely influenced the prognosis. Many of these abdominal cases had other serious injuries. Except for back wounds the abdomen was usually dealt with first. Undue moving of the patient should be avoided.

3. On the whole, abdominal cases should be resuscitated rapidly, and once brought up to an optimum level, they should be operated upon. Seldom do they resuscitate a second time, and once in a state of irreversible shock they do not recover.

4. A quick but thorough examination of the patient should be made, taking note of all wounds present. If there are entry and exit wounds one must try to visualize the organs and tissues the missile has traversed.

5. Intraperitoneal lesions usually stop peristalsis giving a silent abdomen, but there are exceptions particularly in single large bowel lesions of the flank. When in doubt it is best to do an exploratory laparotomy.

6. Exposure should be adequate and the incision should be planned to give the best exposure of the lesions.

7. As a general rule all large bowel lesions require exteriorization. It is safe to suture small distal tears doing a colostomy on the proximal laceration.

8. Penicillin and sulfonamide drugs should be regarded as an aid rather than replacement to drainage. The peritoneal cavity in all large bowel lesions should be drained.

9. Small bowel tears should be sutured when possible. If the tears are multiple and the mechanics and viability of the gut is questionable it is best to resect. Large single resections are occasionally a life saving measure. Even in war surgery the bowel should be closed in two layers.

10. Stomach tears should be sutured in two layers. Where the stomach had herniated into the left pleural cavity it was safer to aspirate with a syringe and needle or by a stomach tube (if possible) before reduction into the abdominal cavity. Regurgitation of stomach contents and aspiration asphyxia is thereby prevented.

11. Hæmorrhage from the liver lacerations can usually be controlled by suture. Rarely is it necessary to pack.

12. Most lesions of the spleen call for splenectomy.

13. All severe kidney lacerations require a nephrectomy. This is particularly true if the pedicle is injured or if there is an overlying perforation of the large bowel.

14. Most wounds of the pancreas are fatal. Tears should be dealt with by simple suture and drainage.

15. Suprapubic cystotomies should be performed high on the fundus. All bladder tears require suture plus a drain to the space of the Retzius.

16. Wound toilet should be thorough.

17. The abdominal incision should be closed in two layers using interrupted sutures except for the peritoneum. As a routine all wounds were dusted with sulfathiazole penicillin powder.

I should like to express my thanks and gratitude to other members of the unit; to Capt. W. F. Wales and Capt. J. R. E. Morden, R.C.A.M.C., the anæsthetists, who ably assisted me; and, to Capt. K. L. Shapiro, R.C.A.M.C., my thanks and appreciation for his illustrations and proof reading of this paper.

TREATMENT OF OBESITY BY APPETITE-DEPRESSING DRUGS

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IT is the purpose of this paper to report on the treatment of 162 cases of obesity, using d-amphetamine, a sympatheticomimetic drug. The interest in the use of sympatheticomimetic drugs in the treatment of obesity was aroused when a rather obese patient who was treated for narcolepsy with benzedrine, had lost 5 pounds in weight in ten days. The patient was rather pleased as she had previously attempted dieting with no success.

Ulrich[2] noted that the loss of weight which occurred in the treatment of narcolepsy with benzedrine was much more common in obese patients than in normal people, and that young persons were less likely to lose as much weight. Nathanson,[7] in 1937, was the first to report a series of cases of obesity treated successfully by amphetamine. Since then Lesses and Myerson,[3] Rosenthal and Solomon,[4] and others have reported favourably on the clinical use of this drug as an aid in weight reduction.

The patients in this group were unselected and although the majority of them came to the office for the purpose of reducing, some who came in with other complaints were advised to reduce. They were obviously overweight. All the cases were of the exogenous type commonly encountered in general practice.

A complete physical examination, including routine laboratory procedures, was carried out on all patients. Basal metabolic rates were performed on a large percentage of the patients. The food intake was controlled by prescribing a 1,100 calorie diet. Fluid and salt restriction was also advised. Benzedrine sulphate, 5 mgm. at 8 a.m. and at 10 a.m. were prescribed for 14 of the group. In order to overcome the excitability and insomnia which was noticed in a few of the cases, it was decided that d-amphetamine should be substituted for six of them. In the subsequent patients d-amphetamine instead of benzedrine was prescribed as the appetite depressing drug. The dosage used was 2.5 mgm. 1 hour before each meal. This depressed the appetite sufficiently to enable the patient to follow the diet closely without feeling it too great a burden. It also avoided the discouragement and irritability which usually accompanies rigid adherence to prolonged use of a low calorie diet.

When the patient's weight became stationary in spite of strict adherence to prescribed treatment the d-amphetamine was increased to 5 mgm. before the heaviest meal and eventually to 5 mgm. before each meal. The maximum dose used was 15 mgm. daily.

Most patients whose basal metabolic rate was 0 or lower were given 1 gr. of thyroid daily. The use of thyroid here was to stimulate the oxidative processes and to mobilize the water and salt from the tissues. Due to the possibility of untoward reaction, patients with a basal metabolic rate of 0 or over were not usually given thyroid.

In order to overcome any vitamin deficiency which might result from the low caloric diet, multiple vitamin pills were prescribed for all patients. This was arranged so that the minimum daily vitamin requirement was supplied.

Eight of the more obese patients were given 2 c.c. of salyrgan intravenously at intervals of four days to two weeks. Four of them were not given salyrgan until their weight became stationary, even though they were using 15 mgm. of d-amphetamine daily. The other four were given salyrgan at the onset of treatment. In each case it was made certain that the urinalysis was negative, in order to avoid administering a mercurial diuretic to a patient with renal damage. As mercurial diuretics and restricted diet may cause a calcium depletion if used over a prolonged period, some of these individuals were given 10 gr. of calcium lactate three times a day after meals. Wherever possible, patients were weighed the day following the injection, to ascertain the amount of weight lost due to diuresis.

In addition to the salyrgan, one of the patients who was 226 pounds overweight, was put on theophylline periodically for three months. The duration of treatment varied from two to twelve months. Patients were instructed to report regularly every two weeks to be weighed and have their weight recorded.

The following is a summary of the treatment of the most obese patient in this series:

The patient, a married woman 28 years old, of Ukrainian origin, first came under observation on October 5, 1944. She complained of amenorrhœa since March, 1944, and was wondering if she was pregnant. She had always been obese and, in the six years since her marriage, and following her first confinement, had increased in weight from 200 to 356 pounds.

This patient was hospitalized and a complete physical examination was found to be essentially negative. An x-ray of the skull revealed a normal pituitary fossa.

While in the hospital she was given dietary instructions (1,100 calorie reducing diet), with d-amphetamine 2.5 mgm. before each meal and salyrgan was given intravenously on three occasions. After the first injection the diuretic response amounted to a weight loss of ten pounds. Two subsequent injections caused weight losses of six pounds and four pounds respectively. This preliminary treatment was possibly the incentive this patient required to enter into the planned program with the utmost spirit of co-operation.

Her progress and treatment from the onset was as follows:

Date	*Weight*	*Treatment*
Oct. 16	356	D-amphetamine 2.5 mgm. 1 hour before each meal; 1,100 calorie diet
Oct. 17	356	2 c.c. salyrgan intravenously
Oct. 18	346	
Oct. 22	343	2 c.c. salyrgan intravenously
Oct. 23	337	
Oct. 26	330	Squibbs special vitamins—1 daily
Nov. 3	326	2 c.c. salyrgan intravenously
Nov. 7	325	Increase d-amphetamine to 5 mgm. before supper.
Nov. 14	322	Theophyllin tablets—1 three times daily
Nov. 29	305	2 c.c. salyrgan intravenously
Dec. 9	296½	2 c.c. salyrgan intravenously
Dec. 19	291½	2 c.c. salyrgan intravenously; increase d-amphetamine to 5 mgm. before each meal
Dec. 28	286	2 c.c. salyrgan intravenously
Jan. 6	280	2 c.c. salyrgan intravenously
Jan. 18	273	2 c.c. salyrgan intravenously
Feb. 1	269½	Basal metabolic rate plus 8; des. thyroid gr. 1 daily; calcium lactate 10 gr. three times daily.
Feb. 22	260½	2 c.c. salyrgan intravenously
Mar. 22	253	2 c.c. salyrgan intravenously
Apr. 28	249	
May 26	242	2 c.c. salyrgan intravenously

RESULTS

1. Of 162 patients treated only 72 persevered with the treatment for more than 2 months. The results in these 72 cases are tabulated in Table I.

2. The amount of weight lost varied in proportion to the number of pounds the patient was over-weight. Those who were 100 lb. or more overweight lost 7.6 lb. per month, those who were 75 lb. or more overweight lost 6.3 lb. per month, those who were 50 lb. or more overweight lost 4.4 lb. per month and those less than 50 lb. overweight lost 4.7 lb. per month.

3. The average weight loss for the entire group was 5.5 lb. per month.

4. In only 4 of the 70 patients was the basal metabolic rate definitely below normal.

5. Two patients were unable to tolerate the d-amphetamine. One became nauseated and the other patient complained of a generalized itching of the skin.

6. Salyrgan is a valuable adjunct in the treatment of obesity, especially when there is marked water retention. The effect of the salyrgan can be measured by the amount of weight lost 24 hours following the injection. This effect was definitely more marked in patients 100 or more pounds overweight. The diuretic effect of salyrgan on any patient gradually decreased with the number of injections given.

7. In this series there were six definite failures. They were reduced less than 20% of the number of pounds that they were overweight.

8. Five patients out of the group of seventy-two became pregnant. Their respective ages were 34, 37, 24, 32, 29. The patient who was 37 years of age had not been pregnant for 11 years.

DISCUSSION

D-amphetamine is a very useful appetite depressant drug in the treatment of obesity. D-amphetamine is a dextro-rotary optically-active isomer of racemic amphetamine (benzedrine). It has been proved experimentally by Colton and his associates[5] that d-amphetamine is the main appetite depressant factor in benzedrine and that the lævo-rotary portion is the main excitant factor.

Eggleston and Weiss[6] claim that benzedrine, in the treatment of obesity, has a twofold action. First, in many individuals it decreases the appetite. This is accomplished mainly by relaxing the smooth muscles of the gut and diminishing hunger contractions. Secondly, it produces a greater capacity for physical exertion by increasing the desire for activity. Rosenthal and Solomon[4] also suggest that benzedrine may act as a diuretic and thus prevent a retention of fluid in the tissues that often occurs in undernutrition resulting from a low calorie diet.

Lesses and Myerson[3] claim that in some cases obesity may be the result of an upset of appetite-regulating mechanism caused by a dissatisfaction with life and a consequent defect in mood. In such cases nibbling of food as a means of satisfaction and compensation for the disturbed mood may occur. This does not constitute true hunger. Benzedrine, by alleviating fatigue and improving the state of mind, can often reduce this desire to eat.

Rosenthal and Solomon[4] showed that the average loss of weight in the treatment of obesity was seven times as rapid with the use of benzedrine as with diet alone, with or without thyroid. In the first four weeks of treatment the response was more than twice as marked.

TABLE I.

No.	Age	Height	Weight	Normal weight	Lb. over	Lb. lost	Basal metabolic rate	Treatment	Length of treatment	Percentage of overweight loss
1.	27	5′3¾″	356	130	226	114	+8	D-amphetamine, salyrgan, des. thyroid	8 months	50.4
2.	40	5′2″	341	132	209	20	+4	D-amphetamine, salyrgan	3 months	9.5
3.	49	5′3″	300	140	160	46	–4	D-amphetamine, salyrgan	5 months	28.7
4.	61	5′8″	300	163	137	54		D-amphetamine	9 months	39.4
5.	32	5′2¾″	290	128	162	37	+3	D-amphetamine, salyrgan	3 months	23.5
6.	20	5′4″	286½	125	161½	12	–9	D-amphetamine, des. thyroid	12 months	7.4
7.	60	5′1″	283	135	148	67	+20	D-amphetamine	5 months	45.2
8.	46	5′1″	270	133	137	18		D-amphetamine, salyrgan	3 months	13.14
9.	22	5′5″	255	129	126	82	–3	D-amphetamine, des. thyroid	6 months	65.01
10.	45	5′4¼″	251	141	110	15½	0	D-amphetamine, des. thyroid	5 months	13.6
11.	48	5′8″	241	160	81	41		D-amphetamine	5 months	50.6
12.	22	5′4½″	236½	126	110½	32	–4	D-amphetamine, salyrgan, des. thyroid	9 months	29.09
13.	50	5′2¼″	232½	138	94½	19	+2	D-amphetamine, salyrgan	6 months	20.2
14.	21	5′6″	232	133	99	30	+5	D-amphetamine, salyrgan	5 months	30.3
15.	32	5′2″	231	125	106	55	+7	Benzedrine sulphate, d-amphetamine	8 months	51.8
16.	36	5′1¾″	231	128	103	41	+1	D-amphetamine, des. thyroid	5 months	39.8
17.	36	6′0″	224	164	60	39	–29	D-amphetamine, des. thyroid	12 months	65.0
18.	26	5′8¼″	224	143	81	16½	+1	D-amphetamine then benzedrine sulphate	2 months	19.7
19.	40	5′5¾″	215	146	69	21	–9	Benzedrine sulphate, d-amphetamine	6 months	30.4
20.	50	5′3¼″	213	141	72	22½	–5	Benzedrine sulphate, des. thyroid, d-amphetamine	8 months	30.5
21.	23	5′2½″	210	124	86	22	–5	D-amphetamine	4 months	20.5
22.	40	5′2″	208	132	76	34		D-amphetamine	5 months	44.7
23.	48	5′3½″	205½	143	62½	23½	–14	Benzedrine sulphate, d-amphetamine	8 months	37.09
24.	20	5′4¾″	204	128	76	15	–11	Benzedrine sulphate, des. thyroid, salyrgan	2 months	20.0
25.	29	5′6″	203	137	66	21	–3	Benzedrine sulphate, des. thyroid.	5 months	31.8
26.	52	5′6″	202	153	49	20		D-amphetamine	4 months	40.8
27.	47	5′1″	201	133	68	15	–1	D-amphetamine, des. thyroid	5 months	22.05
28.	37	5′0¾″	201	126	75	16½	+1	D-amphetamine	3 months	21.3
29.	38	6′1″	200	166	34	20		D-amphetamine	2 months	58.8
30.	44	5′4¾″	200	145	55	14½	–17	Des. thyroid, d-amphetamine	2 months	25.3
31.	50	5′5″	199	147	52	35		D-amphetamine	6 months	67.3
32.	37	5′2¾″	199	132	67	20	+6	D-amphetamine	4 months	29.8
33.	26	5′3″	198	125	73	29	–4	D-amphetamine, des. thyroid	5 months	39.7
34.	18	5′7″	195	134	61	21	–15	Benzedrine sulphate, des. thyroid.	10 months	34.4
35.	48	5′4¾″	194½	147	47½	31	–12	Des. thyroid, d-amphetamine	8 months	65.9
36.	34	5′3½″	193	130	63	12	–3	D-amphetamine, des. thyroid	2 months	19.04
37.	51	5′0½″	192	133	59	26	+14	D-amphetamine	8 months	46.04
38.	49	5′5″	192	147	45	23		D-amphetamine	2 months	51.1
39.	49	5′5″	192	147	45	36	–14	D-amphetamine, des. thyroid	6 months	80.0
40.	35	5′3¼″	191	134	57	25	–10	Benzedrine sulphate, des. thyroid.	6 months	63.1
41.	28	5′7½″	190	141	49	21	–16	Benzedrine sulphate, des. thyroid.	5 months	42.3
42.	49	5′5″	188	147	41	32	–14	D-amphetamine	7 months	77.1
43.	24	5′4″	186	127	59	18	+2	Benzedrine sulphate	5 months	30.7
44.	37	5′4¾″	185	140	45	32	–13	Benzedrine sulphate, des. thyroid.	5 months	71.5
45.	18	5′4¼″	184	123	61	21	0	Des. thyroid, d-amphetamine	3 months	34.4
46.	34	5′3″	183½	130	53½	21½		D-amphetamine	7 months	39.6
47.	24	5′4¼″	184½	127	57½	27½		D-amphetamine	3 months	45.08
48.	49	5′4¼″	184½	143	41½	14½		D-amphetamine	2 months	34.8
49.	36	5′1½″	181	126	55	12	+4	D-amphetamine, salyrgan	4 months	21.8
50.	35	5′4½″	180	138	42	16½	+3	D-amphetamine	4 months	38.09
51.	38	5′3¾″	180	137	43	24	–12	D-amphetamine, des. thyroid	7 months	55.8
52.	63	5′4″	177	144	33	15	–3	D-amphetamine, des. thyroid	8 months	47.4
53.	39	5′4″	172	138	34	17	–16	Benzedrine sulphate, des. thyroid.	4 months	50.0
54.	51	5′6¼″	172	153	19	11	–9	Des. thyroid, d-amphetamine	3 months	57.3
55.	50	5′5¾″	171	152	19	25		D-amphetamine	2 months	130.5
56.	30	5′3″	169½	127	42½	14	+4	D-amphetamine	10 months	33.3
57.	27	5′3¼″	169½	125	44½	20½	–4	D-amphetamine, des. thyroid	3 months	45.4
58.	28	5′1½″	169	121	48	35	–11	Benzedrine sulphate, des, thyroid, d-amphetamine	6 months	72.9
59.	39	5′3¼″	166	138	28	11		D-amphetamine	3 months	39.2
60.	62	5′4″	166	144	22	26		D-amphetamine, Salyrgan	8 months	118.1
61.	45	5′1″	161	132	29	22	–8	D-amphetamine, des. thyroid	4 months	75.8
62.	46	5′3″	160½	134	21½	21½		D-amphetamine	7 months	100.0
63.	34	5′2¾″	160	130	30	15	–4	Benzedrine sulphate	3 months	50.0
64.	24	5′0″	155	117	38	14	–5	Benzedrine sulphate	2 months	38.8
65.	32	5′2″	155	118	37	13	–8	D-amphetamine, des. thyroid	5 months	35.1
66.	47	5′3″	153½	139	14½	12	–8	Benzedrine sulphate, des. thyroid, d-amphetamine	9 months	85.7
67.	38	5′2¾″	149	133	16	10	–22	D-amphetamine, des. thyroid	3 months	62.5
68.	19	5′2¾″	146	121	25	25	–7	D-amphetamine, des. thyroid	5 months	100.0
69.	37	4′11½″	141½	122	19½	11	–6	Benzedrine sulphate	2 months	57.8
70.	49	5′0½″	140½	132	8½	13½	–9	Benzedrine sulphate, des. thyroid.	3 months	165.5
71.	32	5′1″	139½	123	16½	10½	0	D-amphetamine, des. thyroid	3 months	62.5
72.	49	5′0½″	139	130	9	20½		D-amphetamine	7 months	222.2

Beyer[1] showed that 30 mgm. of benzedrine orally increased the normal metabolic rate an average of 15.4% in the first 2½ hours. This returned to normal in 20 hours. This may be a factor in producing a weight loss with benzedrine; 30 mgm. was the maximum total daily dose used by Lesses and Myerson, but in this series of 14 cases the dose used was 15 mgm. daily.

Nathanson[7] has called attention to the fact that benzedrine was not tolerated well by young persons. D-amphetamine has all the effects of benzedrine except that the insomnia, irritability, edginess and tenseness which were frequently encountered with the latter were not present. Colton[5] and his associates report a series of 300 cases treated favourably by the use of d-amphetamine. In their group the average dose used was 15 mgm., but in our series only 7.5 mgm. was used. Colton and Steinberg[5] by taking the drug themselves showed that d-amphetamine is non-toxic in doses up to 60 to 80 mgm. over a period of 48 hours, and in the absence of sleep, water and food have an exhilarating effect.

The only toxic symptoms noted in this series of cases was itching of the skin in one patient and nausea in another. D-amphetamine can be given one hour before the evening meal, even if the meal is taken at 7 p.m. or later in the evening. Benzedrine given at that time would very often cause insomnia.

It is rather difficult to decide when a patient's weight has been sufficiently reduced. There are many factors to be considered; the length of time the patient has been overweight; the bony structure; the elasticity of the skin; and the feeling of well being. Each case has to be decided on an individual basis. Patients who are 25 pounds or less overweight could probably be reduced 25 pounds with no deleterious effects, but a patient 100 pounds overweight should probably not be reduced by the entire 100 pounds.

There is a definite danger of overtreatment, especially in some women who are too interested in their figures. One of the women in this series was nine pounds overweight and lost 20½ pounds. Early in the course of this study it was decided that the amount of d-amphetamine should be limited by prescription to that required between visits.

It is rather regrettable that such a large percentage of the patients did not follow the treatment for more than two months. Many of these were doing quite satisfactorily for three or four weeks, then stopped their fortnightly visits. Much better results might be obtained in the future when it is to be hoped that medical personnel will have more time to devote to follow up studies and encouragement of each obese patient.

Such encouragement is a most important part of the treatment. The patient must be convinced that his or her obesity is chiefly due to over-eating or bad eating habits, rather than because of some glandular disturbance. This is rather difficult to do with some people because most grossly obese individuals are obsessed with the idea that their obesity is glandular and very little can be done about it.

As this study neared its termination we began to feel that better results might have been obtained in some of the earlier cases if the dosage of d-amphetamine had been greater for those of larger-body build and frame. The reason for this was our fear that habituation to the drug might result. So far our experience has not demonstrated one case of addiction to either benzedrine or d-amphetamine.

SUMMARY

A study of the treatment of 162 cases of obesity with sympatheticomimetic drugs is presented.

The weight loss over periods of greater than two months is presented in tabulated form.

The possible reasons for the results obtained are discussed.

NOTE: The d-amphetamine sulphate used was manufactured by the Smith, Kline & French Laboratories, Philadelphia, Pa., under the trade name of dexedrine sulfate in 5 mgm. tablets.

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A physician can sometimes parry the scythe of death, but has no power over the sand in the hour glass.—Mrs. Thrale.

A STUDY OF CAUSES OF BLINDNESS IN OVER 12,000 CASES IN CANADA*

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IN this paper data on 12,652 blind persons in Canada has been coded in accordance with the standard classification of the Committee on Statistics of the Blind. Our information in each case was obtained from the ophthalmologists' reports in the files of the Canadian National Institute for the Blind covering all Canada.

Among this blind population the visual acuity varies from no perception of light, which is the ophthalmologist's conception of blindness, to 6/60, which defines the upper limit for economical blindness accepted by the pension authority. There are now 6,777 persons in Canada receiving this pension, which amounts to an expenditure of somewhat over $2,000,000.00 per year.

In Table I, classification is carried out on the basis of topography and type of disease. The numbers in column A are those with no

*Read before the Canadian Ophthalmological Society, Montreal, June, 1945.

TABLE I.

TOPOGRAPHICAL CLASSIFICATION

	A	*B*	*C*	*1 - 20*	*21 - 40*	*41 - 60*	*60+*	*Total*
Eyeball								
Glaucoma	570	775	131	—	97	614	765	1,476
Myopia	20	795	247	118	278	554	112	1,062
Congenital anomalies	78	336	109	443	38	32	10	523
Anophthalmos	89	—	—	26	28	24	11	89
Phthisis bulbi	379	—	—	136	129	80	34	379
	1,136	1,906	487	723	570	1,304	932	3,529
Cornea								
Interstitial keratitis	4	80	20	54	30	16	4	104
Phlyctenula	—	12	5	8	6	3	—	17
Corneal ulcer	12	79	17	29	27	34	18	108
Corneal scars	104	656	124	246	180	339	119	884
Other affections	10	104	24	26	44	52	16	138
	130	931	190	363	287	444	157	1,251
Uveal tract and retina								
Iridocyclitis	136	422	56	65	175	256	118	614
Sympathetic ophthalmia	105	171	23	102	64	96	37	299
Chorio retinitis	63	843	182	104	169	419	396	1,088
Detached retina	41	143	12	14	49	96	37	196
Retinitis pigmentosa	35	335	68	79	177	166	16	438
Central choroiditis	4	81	22	12	17	29	49	107
	384	1,995	363	376	651	1,062	653	2,742
Optic nerve								
Optic atrophy	438	1,236	190	292	472	779	321	1,864
Lebers	4	47	5	31	13	11	1	56
Retro bulbar neuritis	7	45	10	6	18	27	11	62
Other	1	22	1	1	5	14	4	24
	450	1,350	206	330	508	831	337	2,006
Crystalline lens *Cataract*								
Congenital	24	463	90	577	—	—	—	577
Juvenile	—	4	4	—	7	1	—	8
Senile	34	1,792	217	—	43	623	1,377	2,043
Traumatic	1	47	6	5	21	18	10	54
Complicated	63	277	30	14	47	168	141	370
Aphakia	1	25	15	4	2	16	19	41
Dislocated lens	1	22	8	22	3	2	4	31
	124	2,630	370	622	123	828	1,551	3,124
Grand total	2,224	8,812	1,616	2,414	2,139	4,469	3,630	12,652

light perception, those in column B have visual acuity up to and including 3/60 and in column C over 3/60 up to and including 6/60. The next four columns show the age at which blindness occurred, while the last column shows the total number of cases of each condition diagnosed.

Among the diseases of the eyeball in general we find glaucoma with the largest number, showing the necessity for early diagnosis, research to discover its causes and further investigation to show the best methods of treatment in the different types of the disease.

Myopia is the next largest group. Our conservation of vision classes with guidance in the selection of a vocation have been helpful, but here, also, the real solution would seem to be research resulting eventually in the discovery of the cause.

Congenital anomalies include nystagmus, microphthalmos, buphthalmos, colobomas and other conditions such as optic atrophy, corneal scars, chorioretinitis, etc., which were reported by the examining ophthalmologist as having been present at birth.

In the large group due to corneal conditions, 884 were diagnosed as corneal scars with infection or trauma as their etiology. We can assume that most of these were the result of corneal ulcer.

Preventive measures could almost eliminate the 104 cases due to interstitial keratitis and if every inflamed or injured eye were referred to the ophthalmologist in its earliest stage I believe blindness, due to corneal ulcer, would occur in only a few cases.

Under diseases of the uveal tract we see 299 cases due to sympathetic ophthalmia. This is another sharp reminder of the urgency of immediate attention by the ophthalmologist for all eye injuries. In 33 of 196 detached retinas, trauma was given as a probable cause and in nearly all, myopia was mentioned. In over 100 of the 438 cases of retinitis pigmentosa we had sufficient family history to prove heredity as the cause. In the remainder this etiology was assumed.

Blindness was caused by disease of the optic nerve and visual pathway in 2,006 cases; in 1,864 of these it was due to optic atrophy. The 56 cases of Leber's disease were assumed to be hereditary. The 62 cases of retrobulbar neuritis were due to poisons or disseminated sclerosis and the 24 listed under other causes were due to injury or disease of the higher visual centres.

Cataract caused blindness in 3,124 cases of which number 2,043 were senile cataracts.

Of the 12,652 cases classified, 8,812 had a visual acuity from light perception up to and including 3/60, 2,224 had no light perception and 1,616 had better than 3/60 but not more than 6/60. The largest number of persons

TABLE II.
ETIOLOGIC CLASSIFICATION

Infectious diseases:	
Diphtheria	2
Gonorrhœa (including Oph. Neo.)	29
Ophthalmia neonatorum (not specified)	177
Measles	28
Meningitis	61
Scarlet fever	20
Septicæmia	1
Smallpox	14
Syphilis	518
Trachoma	176
Tuberculosis	52
Infections	863
Other	31
Total	1,972
Traumatic and chemical injuries:	
War	200
Explosions	127
Play or sport	27
Street and traffic	6
Birth injuries	9
Trauma, specified (including burns)	232
Trauma (not specified)	345
Total	946
Toxic poisoning:	
Tobacco	6
Alcohol	40
Other poisons	11
Total	57
Neoplasms	123
Systemic diseases:	
Anæmia	6
Diabetes	234
Nephritis	72
Vascular disease	392
Diseases of central nervous system	50
Other systemic diseases	20
Total	774
Congenital and hereditary:	
Congenital (includes all congenital cataracts)	1,332
Hereditary and familial (retinitis pigmentosa)	499
Total	1,831
Etiology not specified:	
Unknown to science (glaucoma, myopia, senile cataracts)	4,581
Undetermined by physician	2,368
Total	6,949
Grand total	12,652

became blind between the ages of 40 and 60, the next largest over 60, while the 1-20 group is a little larger than the 20-40.

In Table II, the etiology is shown. Gonorrhœa and ophthalmia neonatorum caused blindness in 206 cases and in 177 of these the diagnosis of ophthalmia neonatorum was given with etiology unstated. I would suppose that in a large number of these, gonorrhœal infection was present. In the group of 518 cases in which syphilis was the cause, the disease was acquired; except in the 104 cases due to interstitial keratitis. Under infections we have classified corneal ulcers, some iridocyclitis, some phthisis bulbi and some anophthalmos cases.

There had been 200 blinded Canadians from war service at the beginning of this year and of this number 65 were the result of this war. The total casualties up to February of this year in the Canadian Forces were 90,000, so that there was one blinded soldier in every 1,400 casualties. From the last war 175 cases of blindness resulted, 40 of these were not classified here as some did not return and take up residence in Canada, and, in others, blindness occurred at a later date than 1918 and was due to systemic diseases and other causes directly connected with war service. These were classified elsewhere. The total casualties in the first war were 216,000, of which number 60,000 were killed or died of wounds. If we calculate 175 as the total of blinded persons among 216,000 casualties, it amounts to 1 blinded soldier in 1,235.

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hospital; we *take* them there, and round out their study of anatomy by a series of anatomical clinics, which continue the anatomical study of the living body from the normal, as the students have experienced it in examining each other, to the abnormal, as they encounter it in hospital patients.

Anatomy and Clinical Work

These clinics are quite different from those given in many medical schools *by clinicians* to impress upon junior students the importance of their anatomical studies. And no attempt is made to teach "applied anatomy" as commonly understood; in my opinion this is also a clinician's job. In both these types of teaching, the students are shown anatomy *from a clinical viewpoint,* which of course can be done authoritatively only by a clinician, and successfully only to students in the clinical years who can properly understand and benefit from clinical considerations; it was in this type of teaching that Stiles "gloried and drank deep". In my clinics, however, conducted by one who is not a clinician, the opposite principle prevails: the students study sick and injured people *from an anatomical viewpoint,* considering the anatomical aspects of each case and discussing the anatomical structures involved. You will notice that it is the *students* who do this; it is their first clinical experience; and the circumstance that this experience is gained in hospital, but in their preclinical years under a familiar preclinical professor and from a familiar anatomical viewpoint, does a great deal toward breaking down the psychological barrier between their preclinical and clinical studies, and convincing them that the mis-named *pre*clinical subjects are in reality the matrix surrounding and permeating all first rate clinical work. I am convinced that the preclinical-clinical barrier must be stormed from both sides: from the preclinical side as I try to do in these clinics, and from the clinical side as Stiles did so triumphantly in his.

Organization of Anatomical Clinics

Each student attends ten or a dozen anatomical clinics, spread over the second term of the first year and the first term of the second year. Each clinic is attended by half the class (thirty students), and lasts rather more than an hour, during which two or three cases are studied. During the course each student examines and discusses at least two cases, some of them more than two; but all students present get the benefit of each man's experience, *i.e.,* of some twenty to thirty cases in all.

A day or two before each ordinary clinic (I shall mention the special ones later) I go to the hospital, and the resident (who is expecting me) shows me a list of all available patients; I make a "short leet" of cases I wish to see, and having examined these with the resident, I decide which I want for the forthcoming clinic; the patient's consent is obtained, and the resident arranges for the patient to be in the clinic room at the appointed time. I attach importance to establishing cordial relationships with each selected patient at this preliminary examination, so that when he (or she) comes to the clinic he finds an "old friend" in charge, and apprehension and uneasiness subside. The students are forewarned about the importance of consideration for patients, and, save in exceptional cases, no patient is subjected to examination by more than two or three students. Of course the patient's x-ray films are studied if useful for our purpose.

Selection of Cases

There are two chief limitations in selecting cases: (1) patients should not be acutely ill, and (2) that part of the anatomy course already covered must have included the anatomy relative to the case: an ulnar palsy is of little use to students who have not yet dissected the hand. I neither expect the resident to find cases for me nor ask for any particular type of case. I select the best for my purpose from what is actually available, and I have yet to experience serious difficulty.

I have a record of every case utilized since I came to Winnipeg; a few general statements will suffice to indicate the types found most useful. Since the students have no clinical knowledge or experience, acute cases are best avoided, though some may be utilized after the acute stage is past, such as tenosynovitis, mastitis and mastoiditis. Easily visible and palpable lesions are best, such as tumours, lymphadenopathies and many herniæ. Most peripheral nerve lesions are good, for instance Bell's palsy; so are certain central nervous lesions, for example, poliomyelitis, some hemiplegias, spastic paralysis and Parkinsonism; also hydrocephalus and intracranial lesions with clear localizing signs, especially cranial nerve palsies. Certain medical cases are useful, such as thyrotoxicosis, angina pectoris, coronary thrombosis, cardiac arrhythmias, con-

gestive heart failure, vasospastic disorders, and jaundice from any cause. Of course congenital anomalies rank high, *e.g.*, spina bifida, harelip and cleft-palate, branchial and thyroglossal cysts, visceral transposition, ectopia vesicæ, hypospadias and undescended testis.

MODUS OPERANDI

The method of conducting the clinic varies greatly according to the type of case and to the student's handling of it, the entire proceedings being extempore and "off the record". I regard the last point as important, for two reasons: (1) although subjected to questioning, the student cannot take refuge in the plea that he is the victim of examination panic and mental inhibition; and (2) if a student gives evidence that he has not been doing good work, I feel free to point out the error of his ways *coram populo*, knowing that I am not upsetting a candidate at an examination.

The student is usually confronted with the patient at once, and asked if he observes anything abnormal. Having already had some experience in examining normal people, he usually soon discovers any obvious abnormality. How does he know that it is abnormal? By comparison with the normal. How does he know what is normal? From having examined and studied normal people in the Department of Anatomy. The student thus sees why he *must* take the trouble to become familiar with the normal living body, and bring that knowledge to the bedside. There is no discussion of purely clinical matters (diagnosis, treatment, prognosis); the discussion is strictly anatomical, though oriented around clinical phenomena and problems not anatomical structures and sequences. For instance, a case of hæmolytic icterus elicits discussion of the structure of the skin, of the liver (including details of its vessels), and of the reticulo-endothelial or macrophage system, and hence of the bone-marrow, spleen and lymph nodes. In a case of extra-hepatic obstructive jaundice the emphasis is upon a review of the relations of the biliary ducts and of the pancreas. Any cardiac arrhythmia brings forth a discussion of the conduction system. The anatomical structures involved in the manifestations of congestive heart failure are often as widespread as those concerned in hæmolytic icterus; and œdema from any cause leads to a discussion of the minute anatomy and precise inter-relationships of blood capillaries, tissue spaces and lymphatic capillaries. A student's understanding of the pyramidal tracts is apt to improve after seeing a patient with a typical hemiplegia in which the upper facial muscles are less affected than the lower, side by side with another patient exhibiting a crossed hemiplegia in which upper and lower facial muscles are equally affected, and being called upon to explain anatomically the differences between the two cases. Inguinal and femoral herniæ naturally evoke thorough reviews of the regions and structures involved. These are just a few random examples.

The special clinics, hereinbefore mentioned, are given at the Children's Hospital upon cases of poliomyelitis affecting (collectively) all regions of the body. The methods of testing the various muscles are demonstrated by an expert physiotherapist who holds appointment in the Department of Anatomy as demonstrator of myology. She selects the patients, and demonstrates the tests upon both normal and paralyzed children; the students then examine the patients and discuss the anatomy as in the ordinary clinics. A somewhat similar method is followed in the orthoptic clinic at the Children's Hospital.

RESULTS

Perhaps the most important point about these clinics is that the patients are examined and the discussions conducted by the students themselves, who are often required to illustrate their statements upon the blackboard; the professor merely guides, questions, criticizes and approves. No need to tell such students that anatomy is worth studying; they know it from their own experience. On the whole, I do not think that our students know any *more* anatomy than do students elsewhere, for they understand that we are not trying to teach them much anatomy, but to help them to become good doctors, which is not quite the same thing. They realize that merely to "know their anatomy" is not enough; it is essential, but it is only the beginning; that knowledge must be readily available when and where needed; hence they must train themselves to mobilize, utilize and apply it for "the relief of man's estate". These things are borne in upon them, not by the admonitions of any teacher, but by that most impressive of all teachers, their own experience at the bedside. These clinics give the students a better attitude and a sounder orientation toward anatomy than anything else of which I know; they make clear to the students the standard set for them, the

kind and degree of mastery that they must strive to achieve, and the satisfaction and confidence that such mastery confers upon its possessor. I need only add that the professor participates in all these benefits!

It is a pleasure to express my appreciation to the Faculty of Medicine of the University of Manitoba, especially to Dean Mathers. In consequence of its progressive policy in permitting its course in the venerable subject of anatomy to be remodelled along lines that doubtless seemed startling at first, this Faculty now occupies an advanced position in the field of anatomical teaching. A special tribute is offered to my clinical colleagues at the hospitals mentioned, whose courtesy permits the presence of their patients at these clinics.

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RÉSUMÉ

A l'Université du Manitoba l'enseignement de l'anatomie se fait par équipes et comprend l'anatomie générale et régionale; de plus, une étude pratique sur le vivant normal vient supplémenter les notions acquises sur le cadavre, et enfin, les étudiants complètent leurs notions d'anatomie normale par des cliniques hospitalières sur l'anatomie cinétique et statique du sujet malade. Les malades ainsi étudiés par l'élève sont choisis par le professeur et présentent toujours une symptômatologie permettant l'application de notions déjà observées à la dissection. La discussion est essentiellement d'ordre anatomique. Le grand avantage de ces cliniques est le travail personnel de l'étudiant qui examine, discute, et démontre lui-même ce qu'il observe. De cette façon, l'élève n'a pas besoin qu'on lui répète que l'anatomie est importante; il le sait, c'est le cas de le dire, expérimentalement. JEAN SAUCIER

"I had rather believe all the fables (in history) than that this universal frame is without a mind, and therefore God never wrought miracle to convince atheism, because his ordinary works convince it. It is true, that a little philosophy inclineth man's mind to atheism, but depth in philosophy bringeth men's minds about to religion; for while the mind of man looketh upon second causes scattered, it may sometimes rest in them and go no further; but when it beholdeth the chain of them confederate, and linked together, it must needs fly to Providence and Deity."—Bacon.

SOME FEATURES OF THE DALHOUSIE UNIVERSITY ANATOMY COURSE*

By Donald Mainland, M.B., Ch.B., D.Sc., F.R.S.(E.&C.)

Professor of Anatomy, Dalhousie University, Halifax

IT would be difficult in a short paper to give an adequate view of the Dalhousie gross anatomy course and impossible to justify its peculiarities. Even after reading the published reports on the course[1, 2, 3, 4] and those in preparation,[5, 6] a critic could doubtless easily show that the Dalhousie anatomy students were badly trained—ignorant of much that in some anatomy departments is still considered necessary. To the Dalhousie anatomy teachers, however, it is some consolation to know that what they are trying to do seems to be in agreement with views that have been expressed for many years by members of the medical profession who have looked on medical education as a whole and have not been obsessed by the importance of individual subjects or specialties.

I suppose that my own wrong-doing (departure from orthodoxy) began 22 years and 4 months ago, when, starting to teach anatomy as an undergraduate demonstrator, I started to ask myself what was the use of anatomy in medical education. I went on asking that question for years and became discouraged with orthodox anatomy, dead, narrow, and unscientific. I saw, for example, that the clinician, having been through the hands of anatomists, had to learn about the living body later; had to learn for himself that living persons differ greatly from each other in structure and function, without being "abnormal", and that often the clinician was not very successful in learning that lesson.

EDUCATIONAL PRINCIPLES

As I went on looking, listening, and thinking, I came upon several general ideas about medical education; for instance:

1. The objective of undergraduate education is essentially general practice. Regarding specialties the undergraduate should merely know enough about them, and about the basic sciences underlying them, to know how his patients can

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benefit from (and occasionally suffer from) the specialists; actual specialization should be a postgraduate matter.

2. The main purpose of undergraduate education should be to help the student to learn how to teach himself.

3. The best form in which to learn anything is the form in which one is most likely to use it.

LECTURES

These three general ideas might be classed as self-evident truths or even as platitudes; but I sometimes wonder what medical education would be like if we wholeheartedly acted on these truths. Even if they influence one's teaching only in a limited and imperfect fashion they are apt to modify it considerably. Formal lectures, for example, are liable to shrink until they almost disappear. In our second-year Dalhousie gross anatomy course there are about 230 hours, of which about 60 were formerly one-hour lecture periods. Last session (1944-45) I talked to the class for a total of perhaps eight or ten hours, hardly ever for an hour at a time. That limitation, however, does not mean that we do not believe in talking, informally, to small groups of students; and, for the class as a whole, short talks (of ten or twenty minutes' duration) given whenever they are appropriate, are very valuable, to stimulate, to clarify, to stress one or two important points, to show students how to draw diagrams for themselves, or to introduce a clinical illustration from a case seen or described in the literature. Ordinary factual information, however, seldom needs to be talked about. Students can, for instance, quickly learn the parts of a bone from a labeled specimen, along with a few mimeographed or printed notes to call their attention to the important features. They then learn to become familiar with the bone, first, by systematically feeling its accessible parts in living subjects, and, secondly, by taking the bone up to an x-ray picture and trying to interpret the shadows. Such students could not pass an examination that required an orthodox description of a bone; but there are other far more important things to learn systematically and thoroughly about bones than their textbook descriptions.

CORRECTION OF CADAVERIC CONCEPTIONS

Applying again our general ideas about medical education, we remember that the student is going to deal with living patients. Therefore he must be shown how to correct, during and immediately after a dissection period, the misleading notions that the dead body engenders; to correct them by palpation, by x-ray pictures and fluoroscopy, and by deductions drawn from diseased or injured persons. Instead of learning muscle functions from a textbook or deducing them from bones, he should by palpating muscles during voluntary contraction find out what movements the brain uses the muscles to produce. One of our auxiliary anatomy books at Dalhousie is the M.R.C. War Memorandum on Peripheral Nerve Injuries,[7] which shows by pictures how muscles can be tested.

Some teachers still believe that instructions for examination of living persons should be kept separate from descriptions that are to be studied in notes or textbook, whether a student is examining the results of his dissection or a demonstration specimen or pictures in an atlas. It has even been asserted that a student who, in the textbook that he is using in the laboratory, meets instructions for the surface marking of an abdominal organ or for the palpation of a contracting thigh muscle, and is obviously unable to carry out the instructions at the time, will therefore probably neglect to carry them out at all.

Having tried the orthodox method (separation of laboratory descriptions from living-subject anatomy) I departed from it years ago by methods that were tried out as mimeographed notes and have recently been published.[3] By these methods the student can test on dissected parts the surface markings that are recommended and note the contrasts in position of certain organs, *e.g.*, abdominal viscera, between the living and the dead. When studying at home he reviews the description which he has read in the laboratory at the same time as carrying out the examination of the living subject. Tests on living subjects in the Anatomy Department show that students certainly do not, as has been suggested, forget to practise surface anatomy and muscle palpation.

The aims of such methods are, first, to break down the barrier between dissecting-room anatomy and the anatomy of the living body, and, secondly, to give the students a scheme which they can review in their clinical years and after graduation. It is obviously hard to evaluate the success of this second aim, except by noting that some students have returned to their anatomy notes during their senior years and have reported favourably on their clinical usefulness.

ANATOMICAL RELATIONSHIPS

When the content and form of an anatomy course are chosen so that they will be most useful to the student later on, the relationships of individual organs to each other, for example the relations of inferior vena cava, of kidney, of pancreas, and of carotid arteries, are for the most part thrown overboard. Instead, a composite picture is built up of the organs in, say, the abdomen or neck; as simple a scheme as possible, but containing information that is most likely to be useful, especially in diagnosis. The value of these and other "basic plans" has been discussed elsewhere.[4]

CHOICE OF INFORMATION

And now it may be asked: How does one know what to exclude and what to include in the information that the student is required to learn? The teacher cannot go very far astray in this selection if he is aware of what students meet in their clinical work and of the type of case that general practitioners encounter, and if he keeps in touch with clinical literature. In addition, we at Dalhousie can test the adequacy of our information and methods by using the patient on whom our students practise their examination of the living subject. As part of this practice the students are asked to imagine that the patient has certain signs or symptoms or a certain disease or injury. The teacher has before him a medical or surgical textbook and shows the students how they can apply the anatomy that they have learned, along with histology and elementary physiology, when they come to study disease and diagnosis in their clinical books, instead of trying to memorize what they read. At the same time the teacher sees for himself whether the anatomical information that he has given is likely to be adequate for the students' later needs.*

SUPPLEMENTARY INFORMATION

The work with small groups on a living subject provides opportunity for the teacher to make his students familiar with sources of supplementary information, *i.e.*, information not to be retained for everyday use. These sources include textbooks, monographs, and a limited number of journal articles; and most of them are not labeled "anatomy". Much supplementary information is given to the Dalhousie students, but they understand clearly that they need not memorize it.

The textbook that they use contains a large number of bibliographic references, and specifies a very small number of them to be examined by the students. With only two or three exceptions the material so specified is, or should be, available in even a small medical school.

FORGOTTEN FACTS

While working out a problem on a living subject, the teacher can get the students into the habit of looking up in their atlases or textbooks the details that they have forgotten. I believe in telling students that they are going to forget most of what they learn, for I could guarantee to forget anything that the best anatomist taught me, even if he had all the time he desired to hammer it into my head. It must, however, be made clear to the students that this admission is no excuse for imperfect knowledge of the prescribed work. Unless that work is thoroughly learned in the anatomy department it cannot be quickly and easily recalled later.

It would indeed be quite incorrect to give the impression that a course such as is discussed here is an easy course. A teacher may subordinate or eliminate information which twenty years' inquiry has shown to be of little or no clinical value, or he may present the obviously important information in a form that seems likely to be useful, but even so, there still remains an abundance of facts to be memorized, and there is required also a continuous effort to understand and apply the facts.

HISTOLOGY, EMBRYOLOGY, AND NEURO-ANATOMY

Although at Dalhousie the teaching of histology and embryology is done in a department separate from that of gross anatomy, the teachers of those two subjects hold frequent discussions with the gross anatomists, so that there is linkage and co-operation without rigid correlation. The gross anatomists frequently refer to histological structure and embryology throughout the course.

In neuro-anatomy (anatomy of the central nervous system) the gross anatomists teach the naked-eye structure and introduce the microscopic structure (tracts, and so on) with elementary ideas of function. The professor of histology gives more details of the microscopic structure and further paves the way for the physiologist's teaching of function.

NUMBER OF HOURS

It will have been noticed that I have hardly touched on the number of hours allotted to anatomy. Thinking of the general principles that should guide one in undergraduate education, I do not feel that the number of hours devoted to a subject is as tremendously important as it is sometimes considered. If we paid

* This introduction of students to the clinical use of anatomy is described more fully in another paper[4] under the name "anatomical clinics". Professor Maclaren Thompson, of Winnipeg, has decribed in his paper a system to which the name is more fittingly applied, an excellent system using patients with actual diseases. In some schools, unfortunately, various circumstances make it difficult or impossible for preclinical teachers to secure more than an occasional patient for their classes. At Dalhousie it is hoped that negotiations now proceeding will help to remove this difficulty.

less attention to the pouring in, hour after hour, of scientific facts, or so-called scientific facts, and paid more attention to truly scientific methods of learning, thinking, and doing, I believe that we should give the student a better chance of becoming a competent practitioner, and that we might even be able to shorten the medical course.

Although I wish to accept full responsibility for the faults of which the Dalhousie anatomy course may be accused, I wish also to acknowledge the valuable contributions of my colleagues, Dr. R. L. de C. H. Saunders, Dr. Moya Saunders, and Dr. Roberta Bond Nichols, to the conducting and further development of the course. Not least among their contributions is the fact that they, who are all medically qualified (one, Dr. Nichols, being currently in practice), feel that this type of course is more likely to be of clinical value than was the method by which they were trained.

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RÉSUMÉ

L'enseignement de l'anatomie ne doit plus avoir la rigidité du passé. On est arrivé à se départir peu à peu d'une anatomie trop livresque en songeant davantage à préparer l'étudiant à la pratique plutôt qu'à la seule théorie de la médecine. Aujourd'hui, l'anatomie s'enseigne à la fois sur le cadavre et sur le vivant; on fait mieux ressortir les rapports des structures étudiées, entre elles, puis en regard des organes voisins. En somme, on tend à faire de l'anatomie une science qui peut s'interpréter aussi bien *in vivo* que *in vitro*. Un cours d'anatomie bien coordonné permet d'embrasser les études connexes de l'embryologie et de l'histologie dans moins de temps qu'il n'en fallait pour enseigner la seule anatomie selon les méthodes dites orthodoxes.

JEAN SAUCIER

Amongst the first-class Powers today the mentally stable are still the directing class, and their characteristic tone is discernible in national attitudes towards experience, in national ideals and religions, and in national morality. It is this possession of the power of directing national opinion by a class which is in essence relatively insensitive towards new combinations of experience; this persistence of a mental type which may have been adequate in the simpler past, into a world where environments are daily becoming more complex—it is this survival, so to say, of the waggoner upon the footplate of the express engine, which has made the modern history of nations a series of such breathless adventures and hairbreadth escapes.—W. Trotter, quoted in *The Lancet*, 2: 413, 1945.

BENZYL-BENZOATE AND WOOL DERMATITIS*

By S. J. Shane, M.D., C.M.†

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WOOL dermatitis is not infrequently encountered in the Canadian Army. In the soldier, it usually manifests itself as a sensitivity of the skin to the battle-dress, and is thus alternatively known as uniform dermatitis. In this article it is desired to distinguish between two forms of this disease: (*a*) A permanent type in which sensitivity has always been present in latent form, and becomes obvious on assuming battle-dress. (*b*) A temporary form, in which sensitivity to wool is produced for a short period, by the application of benzyl-benzoate lotion to the skin, in the routine army treatment of scabies.

A number of cases of the latter group have been noted by the writer in the course of a year's experience in treating skin diseases at Debert Military Hospital, and it is desired to bring the subject to the attention of the medical services.

Diagnosis of the permanent form of wool contact dermatitis (Group A) is simplified by noting the following salient features. (1) There is usually a history of repeated admissions to hospital for an obscure skin disease, which has cleared readily during hospitalization, but has recurred shortly after return to duty. (2) The skin lesion is usually a folliculitis, involving hairy areas in contact with the battle-dress. (3) If, after the eruption has cleared in hospital, the patient is allowed to wear battle-dress in the ward, recurrence is early and dramatic. (4) If patch tests are performed, discrete areas of folliculitis are reproduced under the patches.

CASE REPORT

Pte. J.P.D., aged 27. Admitted to Debert Military Hospital on May 24, 1944, with a pustular folliculitis of 3 days' duration, involving groins, thighs and legs. No previous history of skin eruption. Had been wearing battle-dress with short underwear for the first time since enlistment.

May 25.—5% ammoniated mercury ointment applied.

June 9.—Eruption healed. Discharged.

June 21.—Re-admitted with recurrence.

June 23.—*Staph. aureus* cultured from lesions and found to be penicillin sensitive. Penicillin cream applied.

* Report submitted to the Associate Committee on Army Medical Research, National Research Council of Canada, on April 27, 1945.

† Montreal General Hospital, formerly Captain R.C.A.M.C.

July 7.—Skin rash healed. Discharged from hospital on compassionate grounds. To return for further investigation.

July 24.—Re-admitted with recurrence. Treatment with penicillin cream resumed.

August 11.—Skin rash healed. Now wearing battle-dress in ward.

August 13.—Rash has recurred in original form.

August 15.—Patch tests with wool strongly positive.

Diagnosis.—Wool dermatitis.

This case presents the classical features of uniform dermatitis, as recounted above. The response to penicillin cream is only an incidental feature.

Early in 1944, it was noted that a relatively large number of cases were being admitted to Debert Military Hospital with an itching dermatitis following the benzyl-benzoate treatment for scabies. In all these cases the information was elicited that several applications of benzyl-benzoate lotion had been administered within a short period of time, because of suspected relapse of scabies. The eruption was polymorphous in type, variable in distribution and refractory to treatment.

At about the same time it was brought to my attention by Surgeon Lieut.-Commander D. S. Mitchell, R.C.N.V.R., that a secondary dermatitis not infrequently occurred following the benzyl-benzoate treatment for scabies. It was emphasized that this type of dermatitis cleared on avoidance of wool, and persisted under any other form of therapy, unless the wearing of wool was interdicted. It was also noted that the skin reaction did not occur if benzyl-benzoate treatment was administered on one occasion only, but that it tended to supervene if the treatment was repeated within 2 weeks.

These facts led us to the concept that the skin manifestation with which we were dealing was a contact dermatitis, caused by sensitization of the skin to wool by some constituent of the benzyl-benzoate lotion used in the treatment of scabies. Sensitization manifestly did not occur after the first treatment, but was apparently produced by the second or subsequent treatments if repeated within 2 weeks of the first, because of suspected relapse. Accordingly, we began to treat such cases in Debert Military Hospital simply by avoidance of wool, with sample results as shown in Table I.

TABLE I.

Patient	*Duration* of rash*	*Lotion used on more than one occasion*	*Results with avoidance of wool only*	*Time required for cure*
C.A.H....	5 mos.	Yes	Cured	8 days
E.M.....	5 mos.	Yes	Cured	11 days
A.B.....	3 weeks	Yes	Cured	16 days
A.N.....	6 weeks	Yes	Cured	9 days
J.M.....	5 mos.	Yes	Cured	12 days

*Benzyl-benzoate treatment had been repeated at less than 2 weeks interval during this time.

The results obtained by avoidance of wool were dramatic. Itching ceased usually within 24 hours, and the lesions disappeared within a few days. No recurrences have as yet been noted in the cases treated in this manner, indicating that the artificially-produced sensitivity to wool is a temporary affair, and is lost within a short period of time.

The question then arose as to which constituent of the scabies lotion was responsible for the production of wool sensitivity. Until a few months ago the lotion used contained benzyl-benzoate, green soap and alcohol. Recently the lotion has been altered to contain benzyl-benzoate, stearic acid, triethanolamine and water.

Since cases continue to appear following the use of the new lotion, and since the benzyl-benzoate is the only common constituent of the two lotions, it is reasonable to suppose that it is this agent which is responsible for the production of wool sensitization.

Tests were therefore carried out with the following ends in view:

1. To indicate that, in cases of uniform dermatitis following benzyl-benzoate therapy for scabies, wool sensitivity was not present prior to this treatment.

2. To emphasize that the sensitizing constituent of the Army lotio scabei is benzyl-benzoate, rather than any other ingredient.

3. To point out that the sensitivity which occurs is manifested to wool, and to exclude from suspicion any other constituent or characteristic of the uniform.

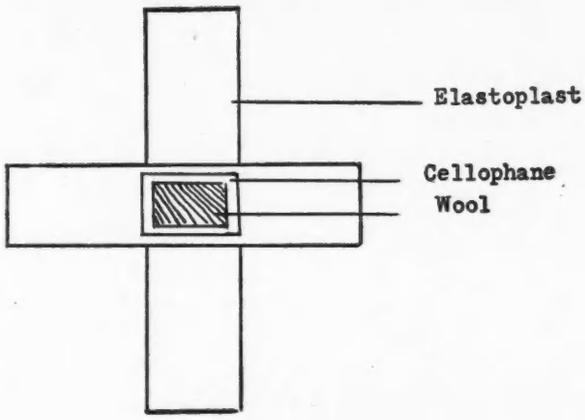
In all these investigations a patch test was used, which was carried out as follows:

A one-inch square of battle-dress material was sewn to the centre of a two-inch square of cellophane. This patch was strapped to the subject's back, using two strips of elastic adhesive 4″ by 3″, arranged in the form of a cross, as in the diagram shown.

The patch test was read in 48 hours, and only those results showing erythema, œdema, vesication and pruritus were accepted as positive. A control was performed on the opposite side of

the back, using cotton materials. Photographs were made of most of the positive tests.

To rule out the other constituents of the lotio scabei as causative factors in producing wool-sensitivity, a 20% lotion of benzyl-benzoate in alcohol was prepared and used in the treatment of the subjects. To establish wool, rather than any other constituent of the battle-dress as the contact allergen, several tests were performed, using undyed woollen blanket material.



The following routine was carried out: When a case of uncomplicated scabies presented itself, a wool patch and a cotton patch were applied to the patient's back. These tests were read in 48 hours. If negative, the patient was painted on two or three occasions with the specially prepared benzyl-benzoate solution. Twenty-four hours after the last treatment, the wool and cotton patch tests were repeated. These were again read in 48 hours.

The results of these procedures are expressed in Table II.

It will be noted from this table that a skin reaction was produced by repeated treatments with a solution of benzyl-benzoate, which was not elicited prior to the application of this drug. Since this reaction did not occur under the cotton patch, the sensitivity is probably a specific one. And since the reaction may be elicited by woollen material other than battle-dress, this specificity is apparently for wool, rather than for any other constituent of the battle-dress.

TABLE II.

Case No.	First patch		No. times treated	Second patch	
	Wool	Cotton		Wool	Cotton
1	Negative	Negative	3	Positive	Negative
2	"	"	3	Negative	"
3	"	"	3	Positive	"
4	"	"	3	"	"
5	"	"	3	"	"
6	"	"	3	"	"
7	"	"	3	"	"
*8	†Positive	"	2	—	—
*9	Negative	"	2	Positive	Negative
*10	"	"	2	"	"
*11	"	"	2	"	"
*12	"	"	2	"	"

*Undyed woollen blanket material used in these tests.
†History of lifelong wool sensitivity.

Following this series, eleven more cases which had already received treatment with lotio scabei were tested. The results are seen in Table III.

TABLE III.

Case No.	No. treatments	Patch test	
		Wool	Cotton
1	2	Positive	Negative
2	20	"	"
3	2	"	"
4	2	"	"
5	2	"	"
6	2	"	*"
7	2	"	"
8	2	"	"
9	2	"	"
10	2	"	"
11	2	"	"

*Apparently a non-specific reaction.

From this table it may be noted that a positive result to the wool patch test occurs in a large proportion of cases which have recently received benzyl-benzoate therapy for scabies.

An effort was then made to determine the length of time during which sensitivity persists. This was an exceedingly difficult problem, as most of the patients were transients, and it was impossible to recall any large numbers for recheck tests. However, four cases, each of whom had had a long-standing dermatitis following repeated treatments with lotio scabei were patch-tested. These patch tests were correlated with a clinical sensitivity test, which was carried out as below. After the contact dermatitis had resolved as a result of treatment by avoidance of wool, the patients were allowed to wear various articles of woollen clothing in the ward, for periods of three days for each article, to determine whether the skin rash would recur.

The graduated tests were carried out in this sequence: (1) Wears woollen socks—three days. (2) Wears woollen socks and drawers—three days. (3) Wears woollen socks, drawers and undershirt—three days. (4) Wears woollen socks, drawers, undershirt and battle-dress—three days.

When a reaction occurred at any stage in the sequence, the test was discontinued.

The results appear in Table IV.

TABLE IV.

Case No.	*Times treated with lotion*	*Patch test wool*	*Reaction to wool clothes*	*Duration of sensitivity*
1	20	Positive	Positive (Drawers)	24 days +
2	11	"	Positive (Socks)	15 days +
3	2	"	Positive (Uniform)	19 days +
4	2	"	Negative	15 days

It will be noted that in only one of these cases did the sensitivity disappear in less than two weeks. The other three patients continued to remain sensitive for long periods, until final discharge from the service was the only alternative.

SUMMARY

1. A transient sensitivity of the skin to battle-dress may be produced by repeated applications of benzyl-benzoate in the treatment of scabies.

2. The result is a contact dermatitis, due to wool, and is apparently not dependent upon any other constituent or characteristic of the battle-dress.

3. The agent which thus sensitizes the skin is benzyl-benzoate the active ingredient of the Army lotio scabei.

4. Sensitivity of the skin to wool following lotio scabei therapy may persist for long periods of time, necessitating discharge from the services.

5. The occurrence of this form of contact dermatitis should be generally recognized by unit and hospital medical officers.

6. When such contact dermatitis appears, it should be distinguished from relapse of scabies, and lotio scabei therapy should not be pursued.

7. Repeated application of lotio scabei should be discouraged, as the transient wool sensitivity which results may persist for indefinite periods of time.

8. Further investigations along the following lines are indicated: (*a*) It is not known whether benzyl-benzoate acts as a specific sensitizing agent, or a non-specific irritant, lowering the sensitivity threshold of the skin to the well-known irritative action of woollen textiles. Tests similar to those described above should be carried out, using other known skin irritants such as sulphur, ammoniated mercury, etc. (*b*) A series of patch tests should be performed using unprocessed wool. (*c*) The method of skin-testing herein outlined should be expanded to include a series of patients with normal skins. (*d*) Cases which have already become wool-sensitive should be rechecked over long periods of time, to determine the exact lengths of time during which the sensitivity persists. (*e*) A series of cases should be investigated by proceeding with the usual scabies treatment, and dressing the subjects in cotton clothing for a period of at least two weeks following therapy. In this way it will be possible to determine whether this form of contact dermatitis can supervene, *without* the influence of wool. (*f*) It is well known that there is a functional element associated with the production or persistence of certain cutaneous diseases. A routine psychiatric examination of all such cases might aid in the assessment of the importance of such a functional element in this type of case.

COR PULMONALE*

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COR pulmonale or pulmonary heart disease is the result of hypertension in the pulmonary circulation. In the same manner that systemic arterial hypertension imposes increased work on the left ventricle, hypertension in the pulmonary circulation imposes increased work on the right ventricle. It is well to bear in mind that the pulmonary circulation is interposed between the right and the left chambers of the heart and normally is the only vascular communication between the right and the left sides of the heart. This circuit, therefore, is a very important vascular structure in the maintenance of the general circulatory continuity and function, both anatomically and physiologically.

The vascular tree of the lung, as in the case of other vascular elements of the body, is composed of tributaries, both large and small, considerably in excess of the customary functional demands.[1, 2, 3, 4] This is a fortunate provision because this structural and physiological reserve frequently determines the patient's chance for

* Presented at the Seventy-sixth Annual Meeting of the Canadian Medical Association, Montreal, June 15, 1945.

recovery when a considerable portion of the pulmonary circulation becomes obstructed.

Pulmonary heart disease may occur suddenly and be acute or it may occur gradually and be chronic.

ACUTE COR PULMONALE

The most frequent cause of acute cor pulmonale is sudden obstruction of a considerable portion of the pulmonary circulation (sufficient to produce dilatation of the right ventricle) by a massive embolus which has become detached from a thrombus in the systemic venous circulation, usually in one of the veins of the leg, pelvis or abdomen. Less commonly, the embolus may arise in one of the chambers of the right side of the heart. Occasionally, but rarely, rupture of an aortic aneurysm into the pulmonary artery produces acute cor pulmonale.[5] Acute compression of the lungs by the sudden herniation of abdominal viscera through the diaphragm has been recorded as a cause of acute cor pulmonale but this appears to be a very rare situation.[6]

The clinical manifestations are abrupt and dramatic. There is usually a sudden attack of severe pain in the anterior part of the thorax. The pain may be localized or widely distributed; it may be accompanied by severe dyspnœa and the vascular phenomena of shock. Although none of these symptoms is pathognomonic of the condition, their coexistence and extremely abrupt onset are highly suggestive, especially when they occur after operation. Sudden obstruction of a coronary tributary must always be distinguished from acute cor pulmonale. Death may occur suddenly. If the patient does not die immediately, signs of failure of the right side of the heart may supervene.

In cases of acute cor pulmonale, the electrocardiogram frequently offers important evidence both from the standpoint of the condition under discussion and its distinction from sudden coronary occlusion. The electrocardiogram frequently reveals right axis deviation. The QRS complexes in lead II may be of low amplitude; the T waves in lead II are either iso-electric, diphasic or negative, while T wave negativity in lead III commonly is present. The negative T wave in lead III arises about the iso-electric level. A prominent Q wave in lead III is frequently present. The changes in the precordial leads are variable, although T wave negativity may occur.[7, 8]

The treatment of acute cor pulmonale (usually the result of pulmonary embolism) consists chiefly of emergency measures. Morphine should be administered in appropriate doses to relieve pain, and oxygen therapy should be instituted without delay. The patient should be kept warm and measures should be taken to combat shock. Anticoagulants should be administered with the purpose of preventing the development of an additional thrombotic process. Barker, Allen and Waugh[9] have found that dicumarol, 3, 3′-methylenebis (4-hydroxycoumarin), is satisfactory for this purpose. The drug is administered orally in units of 100 mgm. The entire dose for one day may be given in the afternoon. On the first day, 300 mgm. is administered and 200 mgm. is administered on succeeding days, or the dose may be adjusted to maintain the prothrombin time at thirty-five seconds and at times slightly beyond this figure. However, individualization is always advisable and frequent determination of prothrombin time is necessary. The drug is administered until the patient is again ambulatory. As twenty-four to forty-eight hours may elapse before the effect of dicumarol is noted, heparin may be administered during this period.

The value of digitalis and venesection in cases of acute cor pulmonale is still a debatable issue. When an accessible peripheral vein is the seat of embolic detachment and provided that the patient's condition does not contraindicate the procedure, ligation of the vein above the limits of the thrombotic process is indicated.

The use of anticoagulants from the prophylactic standpoint, especially in cases in which operation is to be performed, is becoming more frequent.

CHRONIC COR PULMONALE

Etiology.—Owing to the fact that no clinical method exists whereby the actual pressure in the pulmonary circulation can be measured, the recognition of pulmonary hypertension rests on an understanding of the abnormalities capable of producing it and on the various clinical signs that such abnormalities may produce. Pulmonary hypertension results from four basic circumstances:[1] (1) obstruction of the pulmonary circulation beyond its structural limits; (2) obstruction of the pulmonary circulation within its own structure; (3) abnormal shunting of blood from the arterial circulation into the pulmonary circulation (such as occurs in

certain cases of congenital cardiac defects), and (4) severe thoracic deformity as seen at times in cases of marked kyphoscoliosis.

Obstruction of the pulmonary circulation beyond its structural limits.—The most common cause of pulmonary hypertension is failure of the left ventricle, regardless of its cause. This is but one phase in the events leading to congestive heart failure. Chronic cor pulmonale occurs when pulmonary hypertension becomes sustained. This is particularly true in cases of mitral stenosis in which pulmonary hypertension occurs as a result of interference with blood flow in the pulmonary veins. In some cases, secondary obliterative changes in the pulmonary arterioles occur and increase the existent pulmonary hypertension.

Obstruction of the pulmonary circulation within its own structure.—The pulmonary circulation may be impeded at different sites; namely, in the larger arteries, in the arterioles or in the capillary bed. The larger the artery concerned, the more localized must be the lesion to produce obstruction; in the periphery of the pulmonary circulation (arterioles and capillaries), the lesion must be extensive and widespread in order to produce significant obstructive phenomena.

The main or larger pulmonary arteries are not uncommonly abruptly occluded by embolism arising at some point in the systemic venous circulation or in the right auricle or ventricle, as mentioned under acute cor pulmonale. Their closure, however, may be gradual by an *in situ* thrombotic process, the exact nature of which is not known.[10, 11, 12, 13] This process may eventuate in chronic cor pulmonale.

Medium-sized and smaller pulmonary arterial branches may be obstructed in several ways. They may be obstructed in sickle cell anæmia, in which extensive thrombosis and endarteritis have been observed.[14, 15] In cases of metastatic carcinoma, particularly if the primary carcinoma is situated in the stomach, the perivascular lymphatic spaces may become engorged with carcinoma cells. This may cause pressure on the arteries combined with the effect of a proliferative connective tissue reaction.[16, 17] In certain countries, notably in Egypt, Mesopotamia and South Africa, schistosomiasis (bilharziasis) may produce pulmonary lesions resulting in pulmonary hypertension.[18] The parasite gains entrance to the body through the skin and is then transported by the blood stream to the lungs, to the systemic circulation and ultimately to the portal system. In some cases, granulomatous lesions may occur near and about the small blood vessels of the lungs.

The pulmonary arterioles play an important rôle in the production of pulmonary hypertension. They are not uncommonly the site of obliterative sclerosis of unknown origin. Similar changes occur in certain cases of severe and long-standing mitral stenosis, in diseases of the lungs such as emphysema and in diffuse fibrosis resulting from tuberculosis and pneumoconiosis. These diseases frequently have been considered the cause of chronic cor pulmonale but clinical experience has repeatedly shown that pulmonary hypertension and failure of the right side of the heart are not always associated with these diseases. The occurrence of associated sclerosis of the pulmonary arterioles appears to be the crucial factor in the development of chronic cor pulmonale.[1, 19]

The capillaries of the pulmonary arteries, as in the case of the pulmonary arterioles, are subject to obstruction from identical conditions. Any pathological process capable of destroying the alveolar structure is capable of destroying the capillary bed in either a localized or widespread manner. The common pathological conditions responsible for such destruction are emphysema and pulmonary fibrosis resulting from tuberculosis, pneumoconiosis and chronic asthmatic bronchitis. Localized or rather extensive capillary obstruction, of course, occurs when large pulmonary arteries become obstructed.

No doubt exists that the most important peripheral level of vascular obstruction of the pulmonary circulation in the production of chronic cor pulmonale is in the arterioles. Disease of the arterioles themselves or widespread pulmonary disease which may cause arteriolar obstruction are the cardinal considerations in the production of chronic cor pulmonale.

Abnormal shunting of blood from the arterial circulation into the pulmonary circulation.—Conditions whereby arterial blood is permitted to flow into the pulmonary circulation include certain congenital cardiac defects. Among these lesions are large septal defects (either of the interauricular or interventricular septum). However, in the presence of smaller defects, the quantity of shunted blood may not be sufficient to influence pulmonary pressure significantly. The combination of congenital defects known as

Lutembacher's complex (atresia of the mitral orifice and patent ductus arteriosus) is associated with pulmonary hypertension and chronic cor pulmonale. Uncomplicated patency of the ductus arteriosus does not result in chronic cor pulmonale.

Severe thoracic deformity in certain cases of kyphoscoliosis.—From time to time the clinician observes cases in which heart failure is associated with severe deformity of the thorax that is secondary to kyphoscoliosis.[20] In such cases there are several mechanical factors and the development of chronic pulmonary hypertension is paramount. Owing to the reduced and deformed intrathoracic space, the heart becomes hampered in its activity, the great vessels become kinked and at times compressed, portions of the lung become compressed and atelectatic and there are regions of compensatory emphysema. Thus, under certain circumstances, chronic pulmonary hypertension may develop and eventuate in chronic cor pulmonale and finally in failure of the right side of the heart.

PATHOLOGY

Cor pulmonale consists chiefly of hypertrophy of the right ventricle but finally there also are enlargement of the right auricle and dilatation of the pulmonary artery. Dilatation of these chambers ultimately ensues with eventual failure. The pulmonary artery and its larger branches may reveal patches of atheroma but the most constant changes are found in the pulmonary arterioles where obliterative lesions are present. Pulmonary arteriolar sclerosis is a diffuse process throughout the lungs and is similar to the arteriolar sclerosis commonly observed in cases of systemic arterial hypertension. Similar lesions were observed by Ayerza,[21] in 1901, who described a clinical syndrome (Ayerza's disease) of failure of the right side of the heart characterized by profound cyanosis. He believed that the arteriolar lesions were of syphilitic origin. The subsequent demand for this characteristic syndrome (which occurs only occasionally) as a diagnostic requisite was instrumental in delaying the more frequent recognition of chronic cor pulmonale.

SYMPTOMS

The symptoms of chronic cor pulmonale are primarily those of pulmonary hypertension and secondarily those of failure of the right side of the heart. Dyspnœa is the outstanding symptom. It may occur gradually but tends to become progressively worse and may eventually incapacitate the patient. As anoxia increases, varying degrees of cyanosis appear. The cyanosis occasionally becomes so severe that the term "black cardiacs" has been applied to the affected patients. Cough is frequently but not always present. It is productive when chronic bronchitis complicates the clinical picture and when passive congestion of the lungs is present. When failure of the right side of the heart occurs, painful enlargement of the liver, ascites, dependent œdema, anuria and, at times, nausea and vomiting occur.

DIAGNOSTIC SIGNS

There is enlargement of the heart, chiefly of the right ventricle and the conus arteriosus. As the right ventricle hypertrophies and dilates, it comes to form the greater portion of the anterior surface of the heart and pulsations are both visible and palpable in the third and fourth intercostal spaces to the left of the sternum. The pulmonic second sound is accentuated owing to the more forceful closure of the pulmonary semilunar leaflets as a result of the high pressure in the pulmonary circuit. This simple physical sign is one of the most important parcels of clinical evidence indicative of pulmonary hypertension (except in the case of infants and children who normally have a relative accentuation of the pulmonic second sound).

There are inconstant signs which are worthy of consideration. While they are not characteristic of chronic cor pulmonale they nevertheless furnish supplemental evidence. Cyanosis may or may not be present. Likewise, clubbing of the fingers and toes is an inconstant finding. When pulmonary emphysema is present, the thorax is hyperresonant, the respiratory excursions are diminished in amplitude, and dry, crunching râles, which are characteristic of the disease, are present. When chronic asthmatic bronchitis exists, the squeaky, musical râles of asthma are very prominent. Secondary polycythæmia may be present but this finding is uncommon. The vital capacity usually is markedly reduced. Cardiac arrhythmia is uncommon although auricular fibrillation may occur when the right side of the heart fails.

The roentgenogram reveals a prominent pulmonary conus, enlargement of the right ventricle and often of the right auricle. The pulmonary fields usually are clear.

The electrocardiogram may remain unaltered although right axis deviation (normally not present in adults) or right ventricular strain (T wave negativity in leads II and III) may be present.

COURSE AND PROGNOSIS

Chronic cor pulmonale may develop insidiously and the patient may survive for many years with varying degrees of invalidism. However, when the right side of the heart fails, death becomes imminent. Death occurs chiefly from congestive heart failure and acute respiratory infection.

TREATMENT

The treatment of chronic cor pulmonale consists chiefly of restricted activities, gauged to meet the requirements of the individual patient. Likewise, measures should be directed toward the prevention of acute respiratory infection. When heart failure supervenes, the treatment is that of congestive failure; namely, rest in bed and administration of digitalis and mercurial diuretics.

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A sound mind in a sound body is a short but full description of a happy state in this world. He that has these two has little more to wish for, and he that wants either of them will be little the better for anything else.—John Locke.

METASTATIC CARCINOMA OF THE CHOROID*

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THE increasing number of proved cases of metastatic carcinoma of the eye reported in recent years suggests that this type of tumour is less uncommon than previously thought. Moreover, one would expect to find such growths more often if an ophthalmoscopic examination was made routinely in advanced cases of carcinomatosis. Such patients rarely come to the attention either of the eye clinician or eye pathologist. In our collection of pathological eyes at the Royal Victoria Hospital, we have four proved cases of metastatic carcinomas of the choroid. Clinically this condition may pass unrecognized or be confused with a primary melanosarcoma. My purpose in reviewing these cases is to emphasize the differential diagnosis in these two types of tumour.

Perls,[1] 1872, was the first to report a carcinoma of the choroid secondary to a primary growth in the lung. Usher,[2] 1923, gave a résumé of the then 110 recorded cases. Ask,[3] 1934, tabulated 211 cases, and Lemoine and McLeod,[4] 1936, found 18 additional cases to add to this list. Of these, 156 were proved cases of metastatic carcinoma of the choroid; 8 cases involved the iris and ciliary body, and in one the retina only was involved. Their report is of particular interest as in their own case both eyes were affected. The left eye was removed because of increased tension and pain; the right eye was treated by x-ray therapy, and useful vision was restored and retained until the final stages of life. Postmortem examination of the two eyes showed a marked fibrosis of tumour cells in the right eye treated by x-ray, as compared with the untreated left eye.

In the textbooks, Duke-Elder[5] has given this subject the best review. He finds the commonest metastasis in the eye is of carcinoma. Average estimates of the site of the primary growth are: the breast 60 to 65%; lungs 10%; alimentary tract 7%. Metastases from the thyroid and liver are rare, and from the prostate and ovary exceptional. Both eyes are affected in 20% of the cases; the left more commonly than the right. Many patients are reported where the

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visual disturbance was the first symptom noticed by the patient in which metastasis was not otherwise suspected.

Life expectancy, after discovery, varies from four weeks to two years, averaging eight months. It usually occurs in the fourth and fifth decades, rarely under 30 or over 70 years.

This metastasis reaches the eye by blood borne emboli of tumour cells ascending through the internal carotid and ophthalmic arteries and through the twenty short ciliary arteries to the posterior area of the choroid. As these vessels are more numerous to the temporal side of the disc the tumours more generally occur here. These emboli block a small vessel, proliferate, then infiltrate through the perivascular spaces. The growth of cells follows the planes of the choroid, taking the path of least resistance. This is, therefore, lateral to rather than into the vitreous.

The fundus picture is a flat thickening of the choroid, more raised at the posterior pole and fading off indistinctly further forward. The vitreous remains clear. At any time a large detachment may occur. Increase in growth is rapid, but glaucoma appears late. The early onset of severe pain is a diagnostic point.

Bedell,[6] 1943, presents beautiful coloured photographs of such a tumour in the fundus, subsequently proved pathologically.

In the four cases in the pathological laboratory of the Royal Victoria Hospital, MacMillan,[7] 1922, has previously reported the pathological findings in the first case, which was obtained at postmortem.

CASE 1

J.P., female, aged 46 years, had the left breast removed for carcinoma, seventeen months before the eye was removed. The eye had been blind for three months before enucleation. Ophthalmoscopic examination at this point showed a mass of dirty yellow colour in the vitreous, and the retina was detached. A shadow was present on transillumination. Tension was 40 mm. of mercury. Metastatic carcinoma in the eye was diagnosed before metastasis was found elsewhere. Death occurred four months after enucleation, and metastases were found widespread in lungs, liver, kidney, pituitary, dura, etc.

The sections show that the tumour is made up of closely packed epithelial cells with little cytoplasm and no glandular arrangement. Necrosis is marked, but actively growing tumour cells are pushing forward at the flat portion of the ciliary body. A second separate small growth is present on the nasal side of the eye. No perforation is found, but cancer cell nests are seen in two nodules on the posterior surface of the sclera. The tumour cells are found to invade the optic nerve.

CASE 2

I.G., in 1925, female, aged 38 years, had a breast removed for carcinoma six weeks before the eye examination. One axillary gland only was found involved.

Prior to enucleation of the left eye, ophthalmoscopic examination revealed a detachment of the retina surrounding the optic disc above and coming forward and downward at sides. It was a buffish colour and not like the usual detachment. There were no folds, the surface was flat, sloping gently and imperceptibly to the periphery of the fundus. There was some fine stippled pigmentation but no hæmorrhages. The tumour extended about halfway to the equator. Tension was 20 mm. of mercury. Vision: counted fingers at 6 inches. Right eye: vision 6/5; normal fundus.

Two months later a flat detachment occurred in the right eye, commencing at the second bifurcation of the nasal branch of the central artery and extended almost to the ora serrata.

The patient subsequently died of a metastasis of the lung, about a year after removal of the eye.

Sections of the eye show that the growth arises close to the optic disc. There is a certain imperfect alveolar arrangement made up of large, round and oval epithelial cells. The stroma is sparse. Finger-like cords of cells burrow along the choroid destroying the normal choroidal tissue. There is only a slight infiltration of the sclera.

Diagnosis: metastatic carcinoma of the choroid.

CASE 3

M.H., in 1943, female, aged 60 years, was referred for consultation because of a detachment of the retina and visual loss. There were no particular complaints of pain.

Examination, left eye: vision 6/60. Field of vision was present in the lower field, sharply delimited along the horizontal meridian. There was a large detachment of the retina in the lower half extending up to the disc margin. Tension was normal to fingers. On transillumination a definite shadow was present. A tumour in the eye was diagnosed and enucleation advised.

The pathological examination was made by Dr. Arnold Branch of the New Brunswick Department of Health, who forwarded the sections for confirmation of his diagnosis.

The tumour is contained within the choroid, replacing the normal stroma except for Bruch's membrane and pigment epithelium which can be traced on the inner side. It extends from the posterior pole forward to the flat portion of the ciliary body where the cells take the stain deeply. In the region of the equator some necrosis is present. The cells are epithelial, growing in papillary fashion with little loose stroma or vascularity. Mitotic figures are present, about five per field.

Diagnosis: carcinoma of the choroid.

It was then found that seven years before the left breast had been removed for scirrhus carcinoma. There had been no symptoms since nor any local signs of recurrence. This, together with a natural reserve, had been apparently sufficient reason in failing to reveal the history of the previous operation. Subsequently she developed pallor, vague pains, anorexia and persistent tiredness, and died four months after the enucleation. An autopsy was not made.

CASE 4

M.H., in 1943, female, aged 61 years, gave a history of tuberculosis, although no organisms were found over a twenty-year period. Seven years ago the right breast was removed and diagnosed as scirrhus carcinoma and metastasis to the lymph nodes. Four months before admission, she had pneumonia and shortly after recovery she developed severe pain in the right eye, with sudden loss of vision. The diagnosis was hæmorrhage into the vitreous. There fol-

lowed remissions and exacerbations of pain, until finally there developed a severe pain with intense ciliary congestion, and she was admitted to hospital.

On examination, right eye, vision: perception of light with faulty projection. Fundus details were blurred due to œdema of the cornea. The tension was raised. On transillumination a shadow was present but this was inconclusive in differentiating between blood in the vitreous or a tumour. A provisional diagnosis of metastatic carcinoma or thrombosis of the central retinal vein, with secondary glaucoma, was made. Miotics reduced the tension to 22 mm. of mercury. X-ray therapy was then tried for ten days, but due to continued severe pain the eye was removed.

On bisecting the globe a large whitish, blood-flecked mass occupies the posterior third of the eyeball and extends for 5 mm. into the optic nerve. Microscopically, this mass is a greatly distended choroid filled with tumour cells which replace the choroidal stroma, but are still contained beneath the choroidal pigment epithelium and Bruch's membrane. Finger-like cords of cells extend forward to the flat portion of the ciliary body. The cellular structure is made up of undifferentiated epithelial cells with large pale nuclei and little cytoplasm. These columns of cells surround and encompass large thin walled blood spaces, giving the tumour a hæmangiomatous character. In places a poorly formed immature alveolar arrangement is apparent. The retina is completely detached. The optic nerve is invaded by tumour cells which are pushing between the septa of the optic nerve fibres. There is, however, no infiltration of the sclera.

Diagnosis: metastatic carcinoma of the choroid.

The sections of the primary growth in the breast are a scirrhus carcinoma, chiefly of the simplex type but here and there reproducing glands. Subsequently, metastases occurred in the lung and in the second eye. She died ten months after the enucleation of the first eye.

COMMENT

These four cases of metastatic carcinoma were secondary to carcinoma of the breast, confirming the accepted view that this is the commonest site of the primary growth.

In three cases other metastases had not been found prior to that in the eye. In two cases the metastases occurred seven years after the primary growth. In three cases, metastasis in the chest was eventually found. The detachment, ophthalmoscopically, extended up to the optic disc in all cases.

From the diagnostic point of view these cases emphasize the following points:

1. To be on the alert for this type of growth.

2. The necessity for a detailed history regarding previous growths or operations in all cases where a tumour is suspected, and in detachment of the retina.

3. That a critical examination of the thorax might show lung metastasis as an aid to the diagnosis.

4. The site of a retinal detachment up to the edge of the optic disc is suggestive of such growths.

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A SIMPLE METHOD FOR SPINAL ANÆSTHESIA IN ANORECTAL SURGERY

By F. B. Bowman, M.D., F.R.C.P.[C.]

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SPINAL anæsthesia should be ideal for any surgery of the anorectal region. Having for many years confined my practise to proctology, any procedure which would simplify operations both from the standpoint of the patient's comfort and the surgeon's convenience, has seemed to me to be of great importance in this very specialized field.

In my hands spinal anæsthesia has been, by all odds, the safest and most satisfactory of any method. I have heard transacral block anæsthesia advocated and have attempted it myself on several occasions but always with discomfort to the patient due to the numerous skin pricks and the time consumed. Intravenous anæsthesia is used by others but is less safe and does not give as satisfactory sphincteric relaxation. General anæsthesia whether nitrous oxide, ether, cyclopropane or what have you, are all given with a certain risk because of the deep anæsthesia required for operative work in this area. Local anæsthesia, no matter what solution is used, is very satisfactory and safe but it distorts the operative field, is painful, and afterwards leaves the area hyperæsthetic.

I shall describe as concisely as possible a method which I have been using for a number of years and in a large number of patients which seems to me practically without risk and leaves the patient with very little or no discomfort following the operation. Taking it for granted that a thorough physical examination has been made the following routine is followed in all patients requiring anorectal surgery, with the exception of resections or other extensive operations. I have printed instructions prepared on stickers, and one of these is sent with

the patient to the hospital, and it describes the routine of preoperative and postoperative treatment.

The patient is given 1½ grains of nembutal the night before the operation and this is usually sufficient. In the morning one hour before the operation he is given 3 grains of nembutal and ½ hour before the operation 1/150 grain of hyoscine hypodermically. The patient is quite drowsy when he reaches the operating room and may be snoring.

In discussing the technique of the administration of spinal anæsthesia I do so at the risk of perhaps offending some expert anæsthetists, many of whom I think might profit by a few suggestions. Some of these were made in a small monograph, *Everyday Proctology*, published by me a few years ago, but may I think be repeated.

First of all the patient is placed in the upright position, sitting with his legs over the table edge and his feet on a stool. The head is bent down, chin on chest, and arms folded across his lap. He is encouraged to bow out his back. The "soft spot" is now located and by pressure with the finger nail a mark is left in the skin as an indication as to where to insert the needle. A solution of procaine ephedrine is now injected into the skin with a *fine* hypodermic needle and a wheal is raised. A *fine sharp* lumbar needle should be used (No. 21). This is held between the thumb and index finger, not in the closed palm, and easily plunged into the canal. The whole procedure should be done delicately and I emphasize this because I have so often seen spinal anæsthetics given very awkwardly, the anæsthetist doubled over, not sitting down, poking and thumbing the patient's back, jerking him around and endeavouring to force in a large perhaps dull needle here and there as he feels for an opening. All of this results in a nervous uncomfortable patient and an upset operating room staff, and it all can be so easily avoided. Knowing that the needle has entered the canal exactly 1 c.c. of fluid is withdrawn using a tuberculin syringe, and the stilette is immediately reinserted, preventing any loss of fluid. This may be an important point in the prevention of postoperative headache. The fluid is squirted into an ampoule containing 50 mgm. of novocaine crystals and sucked in and out until all of the crystals are dissolved. This gives a 5% solution which is hyperbaric, and this is injected into the canal taking at least two minutes for this. The needle is then withdrawn and the patient kept in the upright position for four minutes, with his head resting on the nurse's shoulder. He is then placed in the prone position.

I have frequently done operations for hæmorrhoids, fissures, fistulæ, etc., with as little as 25 mgm. of novocaine, using this technique. Before commencing the operation for internal hæmorrhoids or fissure, from 5 to 10 c.c. of an oil-soluble anæsthetic is distributed throughout the external sphincter. This prevents or modifies any postoperative discomfort, but it is well to remember that oily solutions should not be pooled or an abscess may result. Fifteen minutes before the operation should be completed 100 mgm. of demerol is given hypodermically, and before any dressings are applied a capsule of nembutal, with needle holes in it, is inserted into the rectal cavity. I seldom or never use morphine, which so frequently causes vomiting, a very serious complication in anorectal surgery. The patient leaves the operating room asleep, and seldom wakes up for several hours, frequently asking when the operation is going to take place, and he seldom has a headache.

SUMMARY

Spinal anæsthesia is ideal for anorectal surgery, and no originality is claimed for the technique described by the author, but emphasis is laid on the importance of having a comfortable satisfied patient. Would it be an exaggeration to say that absenteeism and at least inefficiency in industry is in many instances due to anorectal disease. There certainly is no other portion of the human body which is more prone to annoying pathological conditions than this region. I made the following statement in the monograph already mentioned, "Every person over 40 years of age has anorectal trouble" and I have had no reason to change or moderate that statement. The number of ointments, pile cures, etc., on the shelves of drug stores is evidence that average anorectal treatment is either unsuccessful or painful. A comfortable satisfactory anæsthetic with effective sedation would I think minimize the sale of useless and sometimes dangerous ointments, suppositories, and pills for the cure of "piles".

Although it is seldom that patients are sensitive to novocaine, nevertheless it might be wise to test the patient the day before operation

where it is proposed to use novocaine with a minute intradermal injection. In only two patients in many years have I seen severe reactions but these were alarming enough to suggest that a preanæsthetic test for sensitivity might be advisable.

Medical Arts Bldg.

AN EVALUATION OF ROENTGEN PELVIMETRY*

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THE title of this paper perhaps would have been more accurate had it been "An Evaluation of Pelvioradiography" (after Moloy and Swenson[6]). While roentgen measurement of the diameters of the maternal pelvis is extremely valuable, it is no less important to be able to visualize the pelvic architecture, with reference to the birth canal.

During a recent twelve-month period, we have radiographed the pelvis of approximately one hundred women. Each one of these cases was referred for roentgenological consultation and none was examined as an ordinary routine procedure. The majority of the cases were women in whom dystocia was anticipated and this fact explains many of the findings later to be discussed.

The radiologist seldom sees the obstetrical case again after a brief contact with these patients in the x-ray department. No doubt many radiologists have wondered about the subsequent outcome of these cases and it was this thought that prompted the present study.

Why are these obstetrical cases referred for roentgen pelvimetry? A brief summary of the reasons is shown in the following list.

Reasons for Roentgen Pelvimetry

(1) Abnormal external and internal pelvic measurements. (2) Primipara with floating head at term. (3) Multipara with history of previous dystocia. (4) Elderly primipara. (5) Suspected breech presentation. (6) Medico-legal reasons (2%).

The majority of the cases referred for roentgen investigation, were primipara, and many of these had abnormal external measurements. Previous injury or disease of the lumbar spine and pelvis, of course, was a definite indication for roentgen examination. One small group of cases had gone into labour before roentgen measurement was requested and this made the procedure rather difficult. Fortunately, most of our cases were ambulatory and able to cooperate fully. Roentgen examination at eight or eight and one-half months was found to be a desirable procedure in many instances, as it permitted an early induction of labour in those cases possessing minor limitations in the capacity of the pelvis.

A statistical study of the cases referred for roentgen measurement showed that 85% were primipara and that the average age of this group was 27 years. Approximately 16% of the primipara were over 35 years of age. On the other hand, the multipara had an average age of 31+ years and 27% of these cases were over 35 years of age.

Technique of Roentgen Pelvimetry

The method which we have used for the past five years is a form of Thom's method using a perforated grid slate.

We routinely take an ordinary flat film of the abdomen and pelvis, for general detail. The lateral projection may be taken with the patient standing or lying on her side. An 8 x 10 measuring film (for lateral view) is then exposed, using the perforated lead grid located at a level corresponding to the midline of the sacrum. The lateral view permits a complete survey of the bony landmarks of the pelvis, from inlet through to outlet. The measuring film, when placed over the larger lateral view, permits ready measurement of any of the antero-posterior or infero-superior diameters.

The last film taken is an antero-posterior film with the patient sitting semi-upright and supported on a canvas and wooden framework. The plane of the pelvic inlet is placed parallel to the table top and its height above the table measured. Following the first exposure to outline the pelvis, a second exposure is made through the perforated lead grid located at the pre-determined distance above the table top. This superimposes the measuring dots on the outline of the pelvic inlet. This film permits an excellent view of the

* Read at the Seventy-fifth Annual Meeting of the Canadian Medical Association, Toronto, May 25, 1944.

inlet and its landmarks, with centimetre measurement plainly visible.

While a number of other excellent methods of roentgen pelvimetry have been described,[4, 5] the Thoms method has given very satisfactory results in our hands. Thoms has recently introduced a modification of the perforated lead grid for measuring various planes of the pelvis in the antero-posterior film. When used in correlation with the lateral view, this modification overcomes any of the previous objections to this method.

Again, it should be emphasized that these three films permit a study of the pelvic contours in addition to the measurements.

A survey of the radiological findings in 100 cases proved quite interesting. Measurements of the maternal pelvis in respect in the inlet was available in all the cases but further measurements of other planes of the pelvic canal was not always practicable. Since normal measurements with abnormal contours may cause dystocia just as normal contours with small measurements, it would be well at this point to consider classification of pelvic variations.

The types of pelvis were classified according to their architectural features using the method of Thoms[1] and also that of Caldwell, Moloy and D'Esopo.[6]

There are four parent types: (1) Anthropoid pelvis — dolichopellic — long, oval pelvis. (2) Gynecoid pelvis—mesatepellic—female or round pelvis. (3) Brachypellic pelvis—oval pelvis—frequently male in type. (4) Platypelloid pelvis —flat pelvis.

The classification of pelves in this series of cases was an attempt to divide them into the four major types. Too frequently, we found that many of them were of a mixed type, but subdivision of the types was impracticable for the purposes of this paper.

The majority of cases referred for roentgen pelvimetry were examined as outpatients, and 26% of these cases were delivered outside the Ottawa Civic Hospital. Complete parturition records were obtained in 72 cases. An analysis of our findings in these 72 cases is shown in the following Table I.

The figures in brackets are those of Thoms[1]— in his examination of 1,100 white women.

Table II shows the results in this series of cases, in relation to the pelvic conformation. Since the use of medical induction and low forceps in obstetrical cases frequently depends upon the routine procedure of the individual obstetrician, the significance in the following table is limited. However, it is important to note the frequency of normal births in the gynecoid type of pelvis. The number of cases subject to Cæsarean section may seem unduly high, but again it must be emphasized that all the cases in this series were referred for roentgenological consultation because of anticipated dystocia. While approximately 29 of these 72 cases (41%) had Cæsarean section, the actual rate of Cæsarean section for the Department of Obstetrics at the Ottawa Civic Hospital was only 3%.

TABLE I.

		Inlet measurements	
Pelvic type	*Percentage of cases*	*Average antero-posterior diameter in cm.*	*Average transverse diameter in cm.*
Anthropoid	18.0 (18.6)	12.5 (12.59)	11.8 (11.92)
Gynecoid	40.0 (45.9)	12.0 (11.86)	12.5 (12.38)
Brachypellic	38.0 (32.2)	11.7 (11.07)	12.9 (12.81)
Platypellic	4.0 (3.2)	10.4	13.8

In many instances, the roentgen examination served merely as a confirmation that Cæsarean section was a necessary procedure. It is equally true, however, that following roentgen pelvimetry, a number of obstetrical cases previously booked for Cæsarean section, were allowed to go on into normal labour without any subsequent difficulty.

TABLE II.

Type of pelvis	*Spontaneous delivery*	*Medical induction*	*Low forceps*	*Mid forceps*	*Cæsarean section*
	%	%	%	%	%
Anthropoid	10.0	30.0	20.0	..	40.0
Gynecoid	23.0	22.0	42.0	..	22.0
Brachypellic	18.0	15.0	19.0	7.0 (Stillborn)	52.0
Platypellic	None	None	None	None	100.0

The reasons for Cæsarean section were found to be: (1) Disproportion—70% of cases. (2) Placenta prævia. (3) Uterine inertia and non-engagement of the head after trial labour. (4) Maternal systemic disease. (5) Breech presentation with limited pelvic capacity. (6) Toxæmia. (7) Spinal deformity, ankylosed hip, etc.

Only 6% of the cases were found to be breech presentations and only 2 out of the 72 cases showed congenital fetal abnormalities. Both of these were cases of hydrocephalus with spina bifida.

CONCLUSIONS

1. This radiological study was based on 100 cases subject to pelvic radiography for anticipated dystocia. Relatively complete parturition records were obtained in 72 cases.

2. In addition to the pelvic roentgen measurement, these cases were classified according to the pelvic architecture (Thoms[1]).

3. The importance of the pelvic contour is stressed since it may produce dystocia as readily as poor pelvic measurements.

4. The optimum type of pelvis was found to be the round or gynecoid pelvis. The true flat type of pelvis was found to be the least suitable for normal child birth.

5. Every obstetrical case in whom dystocia is anticipated, should have the advantage of roentgen pelvimetry or pelvic-radiography. The obstetrician is then in a much better position to decide on a suitable procedure for the individual case.

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PHIMOSIS FROM THE FLESH FLY, WOHLFAHRTIA VIGIL

By Ewen A. Mackenzie, M.D.

Iroquois Falls, Ont.

The four and one-half year old patient, A.L., was brought to the office complaining of painful micturition. Physical examination revealed a markedly swollen, œdematous and painful foreskin which could not be retracted. There were several small scratches on the scrotum. The child had given a history of a fall astride a log the previous day. In view of this the œdema and swelling was believed the result of trauma and the pushing of fluids with cold compresses locally was advised.

The following day the œdema had subsided somewhat to reveal near the free edge of the foreskin a small white spot resembling an abscess pointing. This was squeezed and a small white translucent worm about ¾ inches long was expressed with a few drops of blood. It was briskly crawling away when retrieved and placed safely in a test tube. Due to its translucency two small droplets of blood could be seen in its interior. Its burrow in the foreskin showed only a little blood with no evidence of pus or serum.

The day following the œdema had subsided and the foreskin could be retracted easily. No evidence of injury to the mucous membrane of the foreskin could be found or other explanation of the worm's presence. No other members of the family were infected.

The Provincial Laboratory reported the worm to be the larva of *Wohlfahrtia vigil*, a flesh fly causing cutaneous myiasis.

A perusal of the usual texts and journals has failed to show any reference to this condition, with the exception of the *British Encyclopædia of Med. Practice* (2: 124, First Ed.) which states this flesh fly is widely distributed in North America, particularly the eastern part; it sometimes deposits its larvæ on the skin of children and a single boil-like warble is produced.

It was felt worthwhile reporting this case both because of the bizarre clinical findings and the scarcity of references to cutaneous myiasis in the literature.

BILATERAL DIPHTHERITIC EXTERNAL OTITIS TREATED WITH SULFATHIAZOLE*

By Ewen A. Mackenzie, M.D.

Iroquois Falls, Ont.

Since diphtheria is, in Ontario, an almost extinct disease it is felt that an unusual instance of this infection subjected to present day chemotherapeutic agents is worth reporting.

The patient, A.P., aged 18, complained of sore ears with slight discharge of five days' duration. His temperature was 99° and pulse 80. He did not feel sick. Both external canals were lined with a greyish shiny membrane. On its attempted removal only small pieces could be detached with difficulty, and fairly free bleeding resulted. An unusual, sweet, musty odour was also noted to arise from the canals. The lesion so closely resembled the classic description that a presumptive diagnosis of diphtheria was made; ear, nose and throat swabs were taken and 20,000 units of antitoxin given intramuscularly.

*From the case records of the Anson General Hospital, Iroquois Falls, Ont.

The patient believed he had received two doses of toxoid ten years previously.

Within 24 hours the Provincial Laboratory reported the ear swabs positive and nose and throat swabs negative for diphtheria bacilli. The virulence test was at a later date reported positive.

The patient was isolated in hospital, given 40,000 units of antitoxin on admission and 30,000 units daily thereafter. He was also started on sulfathiazole tablets IV stat and then II q.4.h. The canals were cleaned daily with full strength hydrogen peroxide (3%) to assist in removing the membrane.

Swabs of the ears taken in 48 hours were negative for diphtheria but revealed the presence of *Staph. aureus.* Antitoxin and sulfathiazole were discontinued and the infection treated with penicillin. Fifteen thousand units were given intramuscularly and 2,500 units dissolved in ½ c.c. normal saline were instilled into each ear q.3.h. After 48 hours of this treatment cultures of the ears were sterile. The rather sodden canals were then dried up with 10% icthyol in glycerin. The patient was discharged clinically cured. Subsequent repeated swabs of ears, nose and throat were negative for diphtheria and no cases were reported among contacts, the majority of whom had been passively immunized with 5,000 units of antitoxin.

Special Article

RELIGION AND MEDICINE

By C. P. Martin, M.B., Sc.D.(Dublin)

Professor of Anatomy, McGill University

Montreal

Some time ago I was asked to write an article on Religion and Medicine, and though I realize quite clearly that considerable risk attends an excursion upon ground so controversial and full of pitfalls I am unwilling to decline the task.

My first difficulty arises from the circumstance that in such a topic there is and can be no general body of universally admitted truths, for our viewpoints and appraisals of fact on such matters necessarily spring from our fundamental philosophies and views of life and vary just as widely. To the materialist, all religion is delusion arising from human credulity and fear, and is itself a propagator of further fears and inhibitions; a source of unrest, confusion and weakness; something that is often fostered by interested parties for ulterior ends, and that we should shun at all costs. To the Christian, religion is the highest truth, the deepest reality, the most valuable knowledge that we can own; a source of strength, joy, peace and confidence; something that we should strive for at any price. Between these extremes lies a vast gradation of opinions each with, in some measure, its own estimate of reality and its own array of fundamental truths. There is no completely common ground. Therefore, since I cannot set out from an agreed and universally acceptable starting point, I can only express my own views as no more than personal opinions, views which I believe to be, at least, a fair approximation to the truth but which to others may appear absurd or incomprehensible.

On three particular questions it seems to me that religion and medicine meet. First, in the basic assumption underlying all medical work; secondly, in the question of miraculous cures and faith healing; and thirdly, in some aspects of modern psychiatry. At the moment the last is probably of greatest interest to us and I propose to devote most of my attention to it after dealing briefly with the first two subjects.

In an address recently delivered in St. George's Church, Montreal, Dr. Hinds suggested that all medical work and research are really based on the fundamental assumption that human life in itself is good and worth preserving. We can scarcely quarrel with this proposition; medical science, consciously or unconsciously, accepts it as an axiom, and in no country, save perhaps modern Germany, has the medical profession or even a considerable proportion of the profession ever deviated from it. Medicine's job is to save human life and relieve human suffering and we believe that the job is worthwhile. But Dr. Hinds went on to say that the basic assumption itself arose from the Hebrew-Christian religious tradition. Here he is on more debatable but still, I think, safe ground. The assumption is of a religious nature, and it is a matter of historical record that no other religious tradition emphasizes so unmistakably the inviolable sanctity of individual human life. No doubt, many modern thinkers would prefer to found medicine on humanism, but I think a very strong case can be made out for the view that humanism itself is, so far as concerns its ethical content, a derivative from Christian ways of thinking, and that pure humanism, without the support of a true religious belief, has no logical foundation.

On the second question I have little to say. No modern medical man would care to deny the influence which our minds exert on our bodies, or question the value of a confident expectation of recovery on the part of the patient for the successful treatment of many ailments. The benefit of prayer is therefore by many ascribed not to its ability to invoke the aid of an externa

Power but to its capacity to build up the patient's own morale. It is just a trick, a deception, that sometimes is useful in giving the patient confidence. Now the Christian dissents strongly from such views. He abhors the bare idea of such self-deception. He believes that he can invoke the aid of an outside Power; he admits that that Power may work through his mind, or through the skill of the doctor, or through any other means, but it is to an external Power that he looks and not to any build-up of his own morale. He believes in the real and objective rather than in the unreal and subjective efficacy of prayer. And I think it is obvious that the direct operation of an external Power is outside the province of scientific medicine. Medicine then has no concern with cures by prayer beyond the fact that it might be asked to make an examination and diagnosis before and after the alleged incident either to confirm or refute the contention that a real cure had actually taken place. Further, any theory of cures by prayer or miracle that attributes the benefit solely to the suggestion which the patient exercises on himself, or to trickery or deception of any sort or degree whatsoever, is completely unacceptable to the Christian.

RELIGION AND PSYCHIATRY

Coming then to the third and most important of our questions—the connection of religion with psychiatry—we may first note that the psychiatrist deals with a wide range of cases. He may have before him one of the more definite types of insanity. More often he deals with a milder kind of mental derangement. Psychiatry has shown that particular mental states can cause, or at least be a predisposing factor leading to, an actual physical lesion. In other cases such states may give rise to signs and symptoms closely simulating those of an organic lesion, though no actual lesion is present. In still other cases they occasion all sorts of abnormal behaviour and ways of thinking. The psychiatrist has first of all to elicit the facts as far as he can.

But when he comes to treatment he makes use of two radically different and distinct methods. First, there are many empirical treatments—electric convulsion, insulin, continuous narcosis, etc., firmly established on experience, though their mode of operation is very imperfectly understood or, in fact, not understood at all. But long and extensive trials have established their value in many types of case. The second line of treatment, especially applicable in the milder derangements in which the empirical treatments are not of much use is the psychological method, and this really consists, in the first instance, of attempts to explain the patient to himself. A man suffering from a particular mental state, say anxiety, depression, resentment or a sense of inferiority, may develop certain signs and symptoms, pain, vomiting, palpitations or even more definite physical disturbances. In many such cases a full explanation to the patient, a demonstration that his symptoms are entirely due to his mental state may suffice to cure him. This treatment may be supplemented by efforts to take the patient's mind off himself; occupational therapy; attempts to give him an interest in life and his fellow beings; in many cases the empirical and psychological methods of treatment may be combined. Sometimes the patient's relatives have to be called in and told the cause of his anxiety or resentment; their cooperation is needed for the removal of the basic situation responsible for his condition.

So far, there is no quarrel between psychiatry and religion. But in many cases the psychiatrist has to go much further; he has to try to reason the patient out of his anxiety or depression, and almost invariably he now steps out of his realm of scientific medicine and into that of philosophy and religion, for a very high proportion of these anxious people are concerned with a sense of guilt or sin. C. G. Jung, the well known Viennese psychiatrist, stated that "Among all my patients in the second half of life, that is to say over thirty-five, there has not been one whose problem, in the last resort, was not that of finding a religious outlook on life". Of course, whatever reasoning the psychiatrist adopts to lead his patient out of the conviction of sin must be simply a reflex of the psychiatrist's own religion and philosophy. He cannot be expected to preach a creed which he does not credit; he will naturally advance the doctrines which he has found adequate in his own experiences to produce the desired end.

Let us take an illustrative case. A man after some years of happy married life finds his wife no longer as attractive to him as she used to be and is unfaithful to her. His brooding over his sin and efforts to escape from it may result in many things. He may become resentful towards his wife and try to put the blame for his situation on her; he may develop insomnia, indigestion or other and graver complaints. He consults a psychiatrist who elicits the basic facts. Obviously there are radically different methods of dealing with the case. The psychiatrist may explain the whole situation to the patient and leave him, with perhaps the help of his own minister, to find his own way out of the uneasy state of guilt. But sometimes the psychiatrist is apt to pass on some of his own philosophy or religion, and if, as is very often the case, he has no religious beliefs we can see what this means. He probably advises the patient, in a guarded way, somewhat after the following manner. He tells him to put away his sense of guilt; to reflect that after all he is just the same as other men; this of course may not be true but it may not be so very far from the truth. He assures the patient that he really has nothing to reproach himself with, that his resentment at the feeling of guilt

is just due to his vanity, his super-ego, trying to set him on a plane above his fellows; he must reconcile himself to the lower plane of common human nature, and while constant infidelity is not to be encouraged an occasional lapse is nothing to get excited about. He may not put things quite as baldly and crudely as this but his advice is pretty sure to conform more or less to this pattern.

Now the Christian does not deny that the patient urgently needs relief from his sense of guilt; he does not deny that a sense of guilt may sometimes be morbid and altogether out of proportion to the heinousness of the sin committed; he does not deny that very introspective people may sometimes form too low an estimate of their own merit as compared with that of their fellows; he does not even deny the efficacy, in some cases and in a worldly sense, of this line of treatment. He knows that it is all too easy to stifle and silence our consciences; that scruples resolutely suppressed soon dwindle and die; that every deliberate repetition of a sin makes a further repetition easier. He freely admits that conscientious scruples are a hindrance in the scramble for power, wealth, admiration and fame; a man can get on in this world much better without them; and he points to Christ's words that "The children of this world are wiser in their generation than the children of light."

But he flatly and uncompromisingly denies that this is the right way to deal with a sense of sin. This way solves the conflict by killing the patient's moral sense and debasing him to the level of an amoral brute unconscious of its own vileness.

The Christian believes it should be resolved by conquering not the moral sense but the sin. He has no desire to set himself up as being, in himself, any better than his fellows, he is ready to allow that he may be much worse, but he believes that through Christ he and they can gain relief from the sense of guilt and power to overcome sin, and he believes that any other apparent release is simply a deception, an insidious drug that lulls men into a pleasant illusion of safety and unawareness of their moral corruption; a narcotic that eases the pain while encouraging the underlying moral cancer.

Of course, I am not suggesting that all psychiatrists are atheists. Some, though perhaps only an inconsiderable minority, are Christians, and many, perhaps the great majority, are affiliated to no definite religious group. Likewise, many who are called Christians today profess no very definite or clear-cut beliefs; the term is sometimes used as almost synonymous with "decent fellow". As I use it, it means one who truly believes in Christ as the Saviour. Even the true and genuine Christian is ready to admit that his faith in and following of Christ are never perfect and that sometimes he may for the moment be conquered by the sin that he should conquer. He admits that he and his fellows have made many mistakes, they have at times condemned trivialities and passed over deadly selfishness and indifference, their zeal has often been misdirected, they have on occasion taken the shadow for the substance, they have gone off at a tangent and not kept their eyes fixed on fundamental things. The Christian, in fact, is ready to admit that he often has been a poor advertisement for the cause that he tries to represent. But all this is beside the point. The gist of the matter is that by the nature of his vocation the psychiatrist is called upon to counsel and guide many people in dire need of guidance on many matters and most especially with regard to the sense of guilt or sin, and he cannot do this without trespassing on the province of religion. It is not that the Christians have attacked psychiatry; the psychiatrists have attacked and invaded the domain of religion.

Lest it be thought that I am misrepresenting the facts I may refer to the following. In the *Montreal Gazette* of October 25, 1945, Doctor, formerly General, Chisholm, a well-known Toronto psychiatrist, is reported to have stated: "For many generations we have bowed our necks to the yoke of the conviction of sin", and "We have swallowed all manner of certainties fed us by our parents, our Sunday and day school teachers, our politicians, our priests, our newspapers and others with a vested interest in controlling us". And later in his address he called for education to eradicate this concept. On page 10 of the same paper for November 2, 1945, it is reported that Dr. Chisholm was given the Lasker award by the United States Committee for Mental Hygiene for outstanding work in the field of rehabilitation. Apparently Dr. Chisholm is a materialist and takes the usual materialistic view of religion, and the award to him of the Lasker prize will probably be taken as an indication that his brother psychiatrists in the States do not dissent widely from his views.

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The rift between the psychological treatments sometimes applied in psychiatry and Christianity is therefore unmistakable. It is

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The rift between the psychological treatments sometimes applied in psychiatry and Christianity is therefore unmistakable. It is

wide and at the moment apparently unbridgeable. Unfortunately, around this region tempers are apt to rise and debate to become vituperative, for we all, materialists and Christians alike, recognize the human need for a sense of security, especially security about the future, and we all alike deeply resent anything that seems to undermine the beliefs to which we turn for reassurance and peace. The Christian is provoked by arguments that question the truth of Christianity; the materialist is just as indignant at any suggestion that throws doubt on his consolatory belief that there is no God and our moral sense is a delusion. Neither side holds a monopoly of bigotry, intolerance and wishful thinking.

In some quarters Dr. Chisholm has been taken severely to task for his address. Now, I think we need to insist that if he honestly holds the opinions he expressed, he has a perfect right to express them, nay, more, he has a duty to do so. He holds a position of considerable responsibility and authority under the Canadian Government and it would be downright dishonesty for him to suppress his genuine opinions on matters of public health just because he thought the Canadian people might not like them. Nor do I think that his opinions will be changed by implying that he is a Nazi, as some of his critics have done, even though we might find it hard to frame an indictment against the Nazis on the basis of his creed. But if we concede so much to him, we must also ask him to recognize that many champions of Christianity are acting in perfectly good faith and on honest convictions and have no vested interest in controlling anybody. Doubtless, religious institutions have often been used for political purposes and have been upheld and exploited by insincere opportunists; doubtless also there are many insincere and ignorant psychiatrists, as Dr. Chisholm himself will most probably admit. We can all detest the rogues and interested parties on both sides of the question.

There is also this to be said for modern psychiatry, that until it arose the whole field of mental ill-health was in the main neglected and ignored but since its advent very notable progress has been made in the handling of mental illness, especially in the empirical treatments. The stimulus of a new approach has certainly encouraged research and gained extensive and valuable knowledge. Nor is this yet all. The rise of modern psychiatry, at least as concerns its psychological methods for dealing with a guilt-feeling, may be taken as a reflection on the Christian and the Christian churches. If we had been more intent on promulgating the gospel of Christ and less intent on furthering the interests of our own particular sect; if we had demonstrated beyond all doubt the power of the Christian gospel to save, to make men happy and free and unselfish; if our churches had really proved themselves able to lead people out of their difficulties and perplexities; if we were less concerned with our worldly position and gave fewer sonorous and literary effusions on politics, there would probably be fewer psychiatric cases today and less need to resort to the psychiatrist. Yet the truth of Christ still stands, and though the Christian may, with sorrow, admit his own failings and shortcomings all this does not remove his irreconcilable opposition to the psychiatrist's method of dealing with a guilt-feeling. I think it is no exaggeration to say that a large section of the general public and even of the general medical profession of today look on modern psychiatry with a good deal of suspicion and distrust. The feeling perhaps, in part, is due to the differences and contentions between psychiatrists, and to their over-enthusiasm for the new method; but in the main it arises, to my mind, from the deep and fundamental cleavage between Christianity and materialism.

Moreover, the Christian believes that his opposition is vindicated by the results. In how many cases does the psychiatrist's method of handling a guilt-feeling lead to temporary relief, only to be followed later on by a worse and more hopeless breakdown? It is hard for a man to kick against the pricks. And what of the host of milder cases that come the doctor's way, the people who accept a materialistic creed and are just weary and tired with the futility, the emptiness, the purposelessness of life and wonder whether it is worthwhile to go on? What has materialistic psychiatry to offer them? A gospel of resignation and forgetfulness; some platitudes about the common human lot; some advice to busy themselves with many interests and let these knotty problems lie. Ah, but the knotty problems will not down. Man shall not live by bread alone. Was it not St. Augustine who said that God has made man for Himself, and in God alone can man find rest and peace? Is this an escape mechanism? It certainly has tremendous escape value; the Christian gospel promises to save human beings. But the Christian is convinced that he believes that gospel not because of its escape value but because it is true. It is a mistake to suppose that we should or can suspend judgment on the question until we attain a cold, unemotional and detached attitude towards it, for none of us can be neutral or indifferent to a question which touches our personal destinies so closely.

It is the customary fate of new truths to begin as heresies and to end as superstitions.—Huxley.

Clinical and Laboratory Notes

NASOTRACHEAL ANÆSTHESIA FOR TONSILLECTOMY AND TEETH EXTRACTION

By Captain I. W. Mann, R.C.A.M.C.

Kingston Military Hospital, Kingston, Ont.

The following method of administering anæsthesia for tonsillectomies and multiple extraction of teeth has been used at Kingston Military Hospital in a series of 60 cases.

1. Preoperative medication — nembutal gr. 1½, 1½ hours before operation and morphine gr. ¼ with hyoscine gr. 1/100, 1 hour before operation.

2. The nose, throat and larynx as far as possible, are sprayed with 10% cocaine 15 minutes prior to anæsthesia.

3. Ten to fifteen c.c. of 5% sodium pentothal are administered intermittently over a period of 7 to 10 minutes.

4. A Magill tube (size 6 usually), lubricated with nupercainal, is introduced into the nasopharynx. The larynx is visualized with a laryngoscope and with a nurse pushing the tube the rest of the way, the tube is guided into the trachea by means of a Magill forcep.

5. The throat is packed off around the tube, below and above the epiglottis with vaseline gauze.

6. The Magill tube is then connected via Adams connectors to a Heidbrink machine.

7. To the breathing bag (which is ⅔ full of oxygen) is added cyclopropane in the amount of 500 c.c. per minute.

8. When the patient is stabilized (that is when cough has stopped and patient is breathing regularly) cyclopropane 50 c.c. per minute and oxygen at 300 to 400 c.c. per minute, are added and maintained at this constant rate throughout the operation. Should the anæsthesia become light, the cyclopropane may be increased for a minute or so.

9. When the operation is finished, the packing is removed, the vocal cords visualized and if any blood is present it is aspirated.

The advantages of this technique are as follows: (1) Speed of induction. (2) Ease with which tube is inserted. (3) The anæsthetist is free to help the surgeon. (4) The pentothal induction prevents nausea and vomiting postoperatively. (5) The danger of pulmonary complications are minimized.

We have had no immediate or remote complications in our series of cases.

THE CANADIAN MEDICAL ASSOCIATION

Editorial Offices—3640 University Street, Montreal

(Information regarding contributions and advertising will be found on the second page following the reading material.)

EDITORIAL

CONTROL OF CANCER

PERHAPS there is no more appropriate and welcome subject on which to comment at the opening of a new year than the recent progress in cancer control. Fortunately, that comment is possible. There are indications that the mortality from cancer now is beginning to come under control. Some of the evidence for this is found in the Metropolitan Life Insurance Company experience amongst their policy holders.* Their records show that the decrease in cancer mortality has been most marked amongst females, the death rate having declined from 90.4 per 100,000 in 1934 to 80.3 in 1944, a decrease of 11%. It is noted however, that for almost 25 years before this decade the female cancer mortality was either fairly stable or showed a downward trend.

Amongst the males the company reports improvement also, but to a less extent. There had been an upward trend in the first quarter century of the insurance experience, due possibly to more accurate diagnosis, but this was checked, if not reversed, and in the last decade the death rate from cancer amongst men over 25 has been practically stationary.

Various factors have contributed to this trend. First possibly in importance is the organized movement to control cancer, particularly by educating people, especially women, to seek diagnosis and treatment at the earliest possible moment. An instance is quoted of a cancer clinic in Massachusetts in which the average delay between the first symptoms and the visit to the physician was reduced from more than 6 months in the period 1927 to 1935, to 3.3 months in 1943.

Then there is the influence of prevention, as in the case of cancer of the cervix. The improvements in obstetrical and postpartum

*From *Statistical Bulletin*, Metropolitan Life Insurance Company, Volume 26, 1945, numbers 3 and 7.

care have done much to lessen the incidence of injuries from childbirth, a related causal factor. In the case of buccal cancer in men there may be some effect from improved oral hygiene.

But most important perhaps is the cumulative effect of constantly increasing numbers of physicians trained to deal with cancer, the increase in public and private facilities for treatment and the development of improved techniques. Another indication of progress is found in the increasing number of patients in whom cure seems to have been attained. The American College of Surgeons up through 1943 had registered more than 39,000 patients who had had no recurrence of symptoms for five or more years after treatment and some other centres have encouraging results.

It is too early to speak of control of cancer as either complete or permanent, for it is still one of our major public health problems, especially in view of the increasing proportion of older people in the general population. It is still the leading cause of death amongst white females between 30 and 60. So that whatever optimism is to be extracted from the results of the fight against cancer, it should only lead to yet further intensification of our efforts to bring it under final control.

THE MARIHUANA PROBLEM

IT is rather curious that a drug which admittedly has such possibilities for intoxication as marihuana should have aroused such heated controversy as to its dangers.

The precipitating reagent in this discussion has been the publication of a study of the sociological, medical and other aspects of the marihuana problem by a committee appointed by the Mayor of New York City.* Amongst other findings the report came to the conclusion that marihuana did not lead to addiction in the medical sense of the word; that it was not a determining factor in the commission of major crimes, and that the publicity regarding its catastrophic effects in New York City was unfounded.

Little criticism is to be made of these findings as they stand, or as far as they go. Marihuana is not habit-forming in the same sense as opium, for example, that is, it is not as permanent and its withdrawal causes no such discomfort; it could not be shown to have been a determining factor in crime in the cases studied; and its effects in New York City could not be described as catastrophic. But it is common for conclusions to be taken as they stand, and for the examination of the associated facts to be overlooked. Not long after the report appeared a definite instance was reported of a 16-year old boy whose taking to the drug was ascribed to his having read a popular account which reassured would-be smokers of marihuana, that the New York report saw no harm in it; and a criminal lawyer used the report as a basis for setting free defendants in cases of peddlers of the drug. The investigators are not to be blamed for perversion of their report by the selective emphasis placed on it by others. On the other the very real danger that lay in such misconstruction might have been foreseen and guarded against.

And even if marihuana is not habit-forming to the extent of some other drugs this seems to be an unfortunate euphemism for the physical and moral decay which its repeated use brings about. Also, it is fairly certain that there is not in New York City at any rate anything like the widespread amount of marihuana smoking which is found in Mexico for example, or, even more, in the Orient and North Africa. In these latter countries the practice has been well established for centuries. We in Canada are comparatively free from the marihuana problem, although a few cases do occur in this country each year. But the deplorable effects surrounding it are so obvious in some other countries that we cannot afford to lessen our solicitude for its control.

The conclusion regarding the association with major crime may have been correct enough with regard to the small number of cases studied in the report, but those who have had much experience with the subject in other countries take a more serious view. At least one case is recorded in recent years in the United States of murder committed under the influence of marihuana. The de-

*The Marihuana Problem in the City of New York, Sociological, Medical, Psychological and Pharmacological Studies by the Mayor's Committee on Marihuana, Jacques Cattel Press, Lancaster, Pa., 220 pp. $2.50.

terioration caused by marihuana is so definite that it is almost a foregone conclusion that its use will inevitably lead to misdeeds in varying degree. The very word assassin is derived from hashish, the Oriental word for marihuana, and the association of ideas is ominous enough, even if all hashish addicts do not actually qualify as murderers.

A still more debatable point is raised in the report in the suggestion that marihuana might be used on occasion in the treatment of chronic alcoholism and chronic toxicomanias. This seems to be an exchange from the frying pan into the fire, and is condemned by those concerned in the control of narcotics as containing definitely dangerous possibilities.

It may be difficult to steer between the Scylla of exaggerated fears of things to be and the Charybdis of giving a tempered reassurance which is only too freely misunderstood by those whose judgment is not in any case the most mature, but this apparently is an instance in which the safer course would be in over-estimation. At any rate this would be a small price to pay for control of such a potential menace.

Editorial Comments

Benadryl—A New Anti-histamine Substance

A recent report from the Mayo Clinic* describes the study of a new substance for the prevention of at least some of the pharmacological actions of histamine. This is beta-dimethylaminoethyl benzhydryl ether hydrochloride, or benadryl.† Animal experiments have shown that benadryl alleviates (*a*) bronchial constriction caused by histaminic shock; (*b*) the vasodepressor action of histamine, and (*c*) the spasm of smooth muscle. Clinical studies have provided encouraging support for its use in cases with an allergic basis, where the underlying problem is one of œdema provoked by the release of histamine or a histamine-like substance. Thus, in urticaria and angioneurotic œdema the use of benadryl was highly effective, in some cases the relief being dramatic.

Of 50 patients with urticaria 34 were completely relieved, 12 definitely improved and 4 had no benefit. In hayfever the results were rather less striking but still notably successful. Of a series of 52, there was relief in 75%, and no help in 25%, and even of these latter some patients ceased the drug because of unpleasant side effects. In the case of asthma the beneficial effects were not decisive and it is felt that much more experience with the drug is necessary in this respect.

The effects of benadryl on the reduction of gastric acidity are regarded as of great significance. It is felt that if the preliminary results are borne out by further investigation a new approach to the control of gastric acidity may become possible.

Amongst the side effects of benadryl there are four which occur with significant frequency—sleepiness, dizziness, dry mouth and nervousness. None of these was severe enough to call for discontinuation. The drug apparently has considerable promise in the relief of symptoms which seem to arise from some abnormality of histamine metabolism, but it is too early to say more than that it merits extended trial.

* *Proceedings of the Staff Meetings of the Mayo Clinic*, **20**: 418, 1945.

† Synthesized by the Parke Davis Co., Detroit.

Scholarships in Radiotherapy

Radiotherapy in cancer demands a high degree of specialization. So far in Canada only a few graduates in medicine have been able or willing to face the long period of training required for this specialty. Fortunately only a few radiotherapists are needed in this country at present, but there must be replacements from time to time. Not so long ago a cancer clinic in one of the Provinces was unable to secure a specialist in this field for six or seven months.

This aspect of the cancer problem has engaged the attention of the Association of Kinsmen Clubs and they are offering four scholarships for postgraduate training in radiotherapy.* Preference will be given to young men returning from service with the armed forces and to those who have graduated in medicine within the last six years. They must be citizens of Canada or Newfoundland and must agree to practise radiotherapy in one of these countries when their training is completed.

It is recognized that the duration of the training must vary with the scholarship holder's basic training and so may extend over a period of from three to five years. It is also understood that considerable expense might be incurred through travel and maintenance in other countries and therefore these scholarships, having a value of from $2,000 to 2,500 annually, may be increased accordingly. The first year will be probationary. The scope of the scholarships will be broad enough to include ancillary subjects such as anatomy, physiology, physics and pathology. Candidates will be selected by a committee of specialists in radiotherapy appointed by the Canadian Cancer Society.

G.S.Y.

* An official announcement of the Kinsmen's generous project will be found under classified advertisements.

Appeal for Back Numbers of Journals

We are now beginning to receive requests for issues of our *Journal* published during the war years, 1940 to 1945, inclusive. These requests come mainly from European countries to which it was impossible to send journals during the occupation period, but we have also been approached by medical colleges in China.

We are unable to meet all these demands ourselves, and would welcome any gifts of our *Journal* numbers issued during this period. They will be of great value in rebuilding the medical literature in Europe. They may be sent to the Medical Library, McGill University, marked for overseas distribution.

Medical Economics

HOW TO MEET CHANGING CONDITIONS IN MEDICINE*

By Harris McPhedran, M.D., F.R.C.P.[C.]

Toronto

Local problems aside, I presume there is nothing of so much concern to each and every one (or at least it should be so) as the demands from so many quarters for changes in our social conditions, with the hope of improving the health and happiness of all. This problem is as old as time and is bound up with every stage of development of the human race. Like so many other things the demand has been given an impetus by the war from which stems so much that is good in the midst of its horrors and sacrifices. *It is the duty of each of us to see things in their proper perspective, swinging neither too much to the right or left.*

The medical profession with its great tradition of achievement, for the good of the human race, has now become involved in this turmoil. We along with nurses, dentists, hospitals, pharmacists, seem to have been chosen as a spearhead in this great crusade.

It is our duty, the duty of every member of our profession to examine for himself, without prejudice and with a cold judicial eye just what part we should play in this social upsurge, to control it or at least give it direction so far as it affects the medical profession.

Therefore let each ask himself: (1) Is this upheaval justified? (2) Should it progress by evolution or revolution? (3) How best can we act for the benefit of the public whom we serve?

In answer to Question 1: One only needs to look at the years gone by and especially the years of depression to realize that some social changes must be effected whereby there shall never again be extremes either of riches or poverty. A better society in which there is opportunity for all but albeit a society in which individual enterprise and work will still have their just reward. "In the sweat of thy face shalt thou eat bread," is still true and no better society will ever be, except through labour, sweat and tears.

Question 2: Should these changes come by evolution or revolution? Is there still not enough common sense, decency and good judgment left in the majority of our people to settle our particular problems by frank and full discussion, without bitterness, hate and selfishness, the bed rock of revolutions? I believe there is. To that end and in an attempt to get the opinion and viewpoint of others the C.M.A. has taken steps to bring together representatives of all those groups now receiving medical services to sit down and reason together with us so that their views may be had and a common basis or bridgehead be established for conjoint action on this problem of health services. May I recommend a similar procedure to each of you for your own community so that we may tell our elected representatives in parliament or legislature what we think is best and how and when it can be done.

To the third question—"How best can we proceed for the benefit of the public whose servants (not slaves) we are?—I believe we can do our work most effectively: (1) by education of the members, undergraduate and graduate, in our own profession; (2) by helping, through various agencies in education of the public as to its responsibilities and opportunities; (3) by extended facilities for postgraduate education. As I am in a Province which has sent forth so many of its sons to become heads of great institutions of learning it is fitting to speak on this subject of education, briefly.

If our scheme of health services is to live up to our first principle and "secure the development and provision of the highest standards of health services" we must start with the students of today and tomorrow. They must have a good background, be of good character, and stable mind, sound physique and high academic standing. It is my belief that greater care in selection of students must be exercised by our universities. The army has set a precedent that might be emulated in instituting a Pulhems profile, and a personnel selection board. Who will make the selection? Up to now university faculties have assumed this responsibility. Is it time to consider a change? A questionnaire sent out to several general practitioners in Ontario by its Committee on Economics brought forth the amazing information that these doctors thought the O.M.A. and the College of Physicians and Surgeons should co-operate with university faculties in this business of selection and also adjustment of curriculum. Some of you may say, "Why?" I should say, "Why not?" These bodies through their members are certainly in a position to know more about students coming from their respective areas than any medical faculty particularly

*Address before the Nova Scotia Division of the Canadian Medical Association, July, 1944.

in the larger universities. If I read the signs of the times aright these alumni are on the way, at least in provincial universities, to making their voice heard.

Moreover the curriculum will have to undergo change, if our students are to fulfil properly their duties to their patients in all matters that pertain to the improvement of their health. Knowledge of town planning, housing, heating and lighting, clothing, environmental conditions, as well as of sewage disposal, water and food supply and measures to be used to prevent disease, will be essential if they are truly to fulfil their duties as medical advisers. Oxford has already established a chair of social and preventive medicine with this in mind. It has been said, we have learned in many instances the cause of disease but do not know the cause behind the cause. In our second principle we state that improved social conditions must precede any plan of health insurance. Through a thorough understanding and knowledge of the living conditions, etc. of our patients we are in a preferred position if adequately trained, to lead the way in effecting improvement in social conditions. Education in social and preventive medicine, greater in degree and fuller in scope, cannot be ignored by our universities. Not only should students receive this training but also our graduates, if they are to co-operate with the other agencies in their community and give leadersip in the development, slow though it be, of all that is good for the health of our people.

Another phase of education needs emphasizing, namely, education of the people as to their responsibility and opportunity as individuals and members of society in promoting the welfare and happiness of all in a community. Improved health for an individual or a community can only come into being through co-operation of all concerned. In this the practising physician should and must give leadership with the assistance of nurses, dentists, hospitals, officers of health, municipal authorities and all organizations interested in the welfare of the community.

Herein lies a great opportunity for the medical man, be he teacher or practitioner.

What about postgraduate education? With doors to a large extent closed for study in the United States and Great Britain, the challenge to provide postgraduate instruction must be accepted and made effective by our own universities, larger hospitals and practitioners. To my mind this is all to the good. As in other matters pertaining to our national life, we have been too retiring and timid, have suffered from an inferiority complex about our abilities and capacities in the science of medicine. The war has shaken some of this nonsense out of us. May the process continue. There is such a thing as Canadian Medicine. Let us act together and put it on the map for the glory of Canada and the benefit of mankind.

Men and Books

WILHELM CONRAD RONTGEN (1845-1923) AND THE EARLY DEVELOPMENT OF RADIOLOGY*

By E. Ashworth Underwood, M.A., B.Sc., M.D., D.P.H.

The year 1945 is associated in two ways with the life and work of the great physicist, Röntgen. Since he was born on March 27, 1845, it is the centenary year. His greatest discovery was made on November 8, 1895, just fifty years ago. The present time seems opportune to review his work and to remember, in passing, those other pioneers who made his discovery possible.

The production of x-rays depends essentially on the fact that when an interrupted current of electricity is passed through a vacuum tube, a stream of rays—the cathode stream—flows from the cathode. The cathode stream can be bent by a magnet. Where it impinges on another body, the glass of the tube or a specially prepared anode, x-rays are produced. In nature and properties these are essentially different from cathode rays. In short, before any advance could be made in the discovery of x-rays, two operations had to be practicable—the production, first of a good vacuum, and second of an interrupted electric current. It is strange that both of the appliances necessary were discovered by the same man—Otto von Guericke of Magdeburg—and were published in the same book.

Guericke (1602-1686) was born in Magdeburg and studied mathematics and mechanics. He was a practical man of the world, and he worked on the fortifications of the fortress. He did not publish his celebrated book until he was 70 years of age, and the date of the invention of the air-pump is therefore uncertain. It was probably between 1635 and 1645. He first used wooden casks and later a copper sphere, which collapsed when a certain degree of exhaustion had been reached. Guericke demonstrated his results before the Imperial Diet at Ratisbon in 1654. The demonstration took first the form of a proof that after exhaustion thirty horses were required to pull the spheres apart; and secondly, an estimation of the actual force required to effect separation. Guericke proved conclusively by this method that air has weight, and he was able to make a rough guess at its density. Since his results were not then published, we have to turn to another source for the first description of his apparatus—the *Mechanica Hydraulico-Pneumatica* of Gaspar Schott (1608-1666) published in 1657. Since Schott was Professor of Physics and Mathematics at Würzburg, there is a coincidental connection between the inventor of the air-pump and the man who made the most fruitful use of it. In England Robert Boyle (1627-1691) became interested in the air, and his air-pump was an improvement on that of Guericke. The result was his well-known monograph on *The Spring of the Air* (1660), which had important results in many fields. Stimulated by Boyle's developments, Guericke later made a third air-pump, which was a great improvement on his previous models. His results were published in his great work, *Experimenta Nova (ut vocant·ur) Magdeburgica de Vacuo*

*Reproduced in part from the *Proceedings of the Royal Society of Medicine*, 38: 697, 1945.

Spatio (1672). In this Guericke also described his frictional electric machine. This consisted of a large glass globe which was filled with molten sulphur. On cooling the glass was removed, and the sulphur sphere was rotated by hand. His work in the field of the induction and conduction of electricity was very important, and again he had a marked influence on Boyle's future experiments. . .

[A short account is then given of the work of Francis Hauksbee, William Morgan and other pioneers in this field.]

Mention should also be made of the work of Sir Herbert Jackson (1863-1936) on the focus tube, which was originally devised by him in studying the exposure of fluorescent material to the electrical discharge in vacuum tubes. Sir William Crookes appears to have discovered the focusing effect of a concave cathode in 1874, but Jackson was the first to adopt this design for practical purposes, and he found that concave cathodes serve to restrict the area of the phosphorescent material. In January 1894 he made a discharge tube fitted with a concave aluminium cathode and an inclined platinum anode. This was the original Jackson "focus tube". With it, like other early workers, he undoubtedly obtained x-rays, but he considered that the rays which were emitted from the anti-cathode were long wave ultraviolet radiations. Jackson used his tube, of course, as a source of light for his fluorescence experiments, but immediately after the announcement of Röntgen's discovery in January 1896 he was able to use his original tube for x-ray work. On May 6, 1896, he demonstrated the use of this tube at a Conversazione of the Royal Society, and in the descriptive catalogue of this function he expressly says that the tube is "a slight modification . . of a tube originally introduced by Mr. Crookes". In his obituary of Jackson Dr. Harold Moore says of his work that, "had the observations been viewed from a different standpoint, Röntgen's discovery might have been considerably anticipated. At no time, however, did Sir Herbert Jackson advance any claim to be the original discoverer of x-rays, or countenance any suggestion that such a claim might be made on his behalf. . . He expressly stated on several occasions that the characteristic penetrating power of the radiations emitted by the anti-cathode was neither discovered nor suspected by him". At this time Jackson was working with Mr. D. Northall Laurie, and many x-rays were taken which do not seem to have survived. Mr. Laurie has, however, shown me a number of x-rays which he himself took early in 1897, still using the original Jackson focus tube, an Apps coil with 5 inch spark, and an eightfold secondary battery.

RÖNTGEN'S EARLIER LIFE AND WORK

It was in late October 1895 that Röntgen entered the field. Like so many others who have scaled the academic heights, his approach to these glittering summits had been somewhat unorthodox, and before considering the events of that pregnant autumn, it would be well to glance at the man, his nature and his nurture. This is especially desirable since he is too near our own time to find more than passing, though very honourable, mention in the histories of science, and since moreover he is sufficiently distant for the softening of the contours which the years bring in their train.

Wilhelm Conrad Röntgen was a Rhinelander, a native of the little town of Lennep im Bergischen, where he was born on March 27, 1845. His father was a merchant, and father and mother were first cousins. His mother was really Dutch. When Röntgen was 3 years old the family moved to Apeldoorn, and there, at the Institute of Martinus Herman van Doorn and in the streets, he added Dutch to his native German. Many years later he brushed up his Dutch in order to greet an old colleague at an official celebration in Holland. He was expelled from the school because of his refusal to split on a fellow pupil who had drawn a caricature of the teaeher. This was a serious matter, since it deprived him of the opportunity for matriculation. After a period at the Technical School at Utrecht he did enter the University—but not as a regular student. He was then nearly 20 years of age. Conditions were easier at Zürich, and in the same year he passed his entrance examination and migrated to that beautiful city. He took his diploma in mechanical engineering in 1868, and his degree of Doctor of Philosophy in 1869 at the age of 24, and before he had finished his course fell under the spell of Kundt, to whom he became an assistant. Two years later he followed Kundt to the University of Würzburg, and in the following year to Strassburg. In 1875, at the age of 30 years, he became Professor of Physics and Mathematics at the Agricultural Academy of Hohenheim in Würtemberg.

It must have been clear to Röntgen's associates that he would not be satisfied with a chair in a second or third class institution. It was obvious that his technical ability, his facility for carrying out complicated experiments with apparatus devised by himself and made with his own hands, and his deep theoretical knowledge of physics were worthy of higher things. If he had started his university career badly, he now took the right step. In 1876, after a year a Hohenheim, he returned to Strassburg as the associate professor with Kundt. During the six years which elapsed between his first arrival at Strassburg and the date of his leaving, he published fifteen papers—the last three with Kundt. In 1879, when he was 34 years of age, he was called to the Chair of Physics at Giessen. There he spent nine happy and fruitful years. In 1888 the University which, although he had occupied a post on its staff, had refused to grant him full academic status because of his unorthodox entry to his academic career, honoured him by offering him the post of Professor of Physics and Director of its new Physical Institute. In that year he removed to Würzburg with his wife—a relative of Otto Ludwig, the poet, whom he had married in 1872—and there they occupied the apartment on the top floor of the Institute. This Institute is of particular interest to all who are connected with radiology, since it was there that x-rays were discovered by Röntgen seven years later.

During his twelve Würzburg years Röntgen was certainly at the height of his ability as an experimental physicist. He was thoroughly at home in the Würzburg atmosphere, and in 1894 he was Rector of the University. From the personal reminiscences given by Fräulein Boveri—daughter of his friend Theodor Boveri, the zoologist—and others, it would appear that his department was well organized, and he had few academic worries—except possibly the

necessity of teaching, which appealed to him less as the years passed. He spent much time in outdoor pursuits, especially hunting and botanizing. Each year he took holidays in the Alps—for example at Pontresina—and also at Lake Como. In later life he acquired a hunting lodge at Weilheim in the Bavarian Alps, which he equipped with a satisfactory scientific library.

Some consider that, even if Röntgen had not discovered the x-rays, he would have been one of the greatest scientists of the nineteenth century, but there are various views on this point. I have read a number of his other papers, but am not qualified to express an opinion. Of his previous work, especially notable were his experiments with Kundt at Strassburg on the electromagnetic rotation of the plane of polarization of light in gases. Faraday had attempted to demonstrate this phenomenon, but had been unsuccessful. He had also written on the absorption of heat in water vapour, the compressibility of liquids and solids, and the production of magnetic effects in a dielectric—the latter investigation being ranked by him as equally important as his discovery of the x-rays. He thus discovered the Röntgen current, which led later to the theories of Lorentz and of relativity. Finally, throughout his career he wrote many papers dealing with crystals, which probably influenced later investigators, and especially von Laue, Friedrich and Knipping in their determination of the nature of x-rays in 1912. It is worthy of passing note that in 1877 Röntgen contributed a short paper to *Nature* entitled "A Telephonic Alarm".

THE DISCOVERY OF X-RAYS

It was in this favourable environment that Röntgen started to work on cathode rays in late October 1895. He used a Ruhmkorff induction coil, a mercury interrupter, and a Hittorf-Crookes vacuum tube. He had also been working with Lenard tubes. which were covered with black paper, in which a window was cut for the passage of the cathode rays. Fluorescent screens were the usual method of testing for the cathode rays even at that time. At a late hour on Friday, November 8, when there were no assistants in the laboratory, Röntgen was testing the density of the black cover—without a window—fitted over a Hittorf-Crookes tube. As he told an interviewer, the shield was impervious to any light known. He noticed bright fluorescence in a screen of barium platino-cyanide which lay on a bench nearby. It seemed improbable that the effect could have been produced by cathode rays as their nature was then understood; but in order to exclude them he experimented with a screen at a greater distance than the known range of cathode rays—even up to 2 metres. The fluorescence persisted. The next step was to interrupt the rays by various bodies which would have been quite opaque to cathode rays. In this way he deduced that he was dealing with a new kind of radiation, the penetrating power of which varied roughly with the density of the interrupting body. When his hand was the interrupting body, he saw the shadows of the bones upon the screen. The next step was to replace the screen by a photographic plate. The first x-ray photograph—frequently reproduced since then—was that of Mrs. Röntgen's hand.

There followed seven weeks of intensive work, during the early part of which Röntgen slept and ate in his laboratory. According to his wife, he was morose and abstracted, and resented the intrusion of mundane matters. On December 28 he presented to the President of the *Physikalisch-Medizinische Gesellschaft* of Würzburg his first written report on the discovery. This he termed a "Preliminary Communication" (*Vorläufige Mitteilung*). It is often said that Röntgen read this report before a meeting of the Society, but this statement is incorrect. Owing to the Christmas season there were no meetings. Because of its importance, however, the report was accepted for immediate publication in the *Proceedings* (*Sitzungsberichte*), and it was printed a few days later. The report was entitled "On a New Kind of Rays" (*Eine neue Art von Strahlen*). On January 6 the news was cabled from London to the whole world, and the reaction was immediate. It should be noted that Röntgen made no oral communication on the subject until January 23, when he addressed the *Physikalisch-Medizinische Gesellschaft* with von Koelliker in the Chair.

In his Preliminary Communication Röntgen presented the subject already fully fledged. He proposed to call the new rays "X-rays" in the meantime. He noted that fluorescence occurs whatever side of the test paper is turned to the tube, even up to a distance of 2 metres. He classified various substances according to their transparency, and he distinguished between the two types of glass. Lead in a thickness of 1.5 mm. is practically opaque. He then investigated the problem of refraction of the rays, using mica prisms containing water or carbon bisulphide, and also prisms made of hard rubber or aluminium. He thought there might be slight deviations. Lenses he found to have no action. Regular reflection does not take place. Bodies behave to the x-rays as turbid media do towards light. He considered that x-rays move with the same velocity in all substances.

He then compared the x-rays with cathode rays. Air absorbs a far smaller fraction of the x-rays than of the cathode rays. A characteristic of the cathode rays is that they can be deflected by a magnet, and he stated that he had made many unsuccessful attempts to show deflection of the x-rays by this method. There follows the important observation that the x-rays proceed from the spot where the cathode

rays strike the glass wall of the tube. If the cathode rays are deflected by a magnet, it is observed that the x-rays proceed from another spot. Hence, since x-rays cannot be deflected, they cannot be identical with cathode rays. The production does not take place in glass alone, but also in aluminium.

Röntgen then mentioned some of the shadow-pictures which he had observed or photographed. Amongst the best known are the set of weights in a closed wooden box; the human hand; the shadow of his laboratory door: a compass in which the magnetic needle was entirely enclosed by metal; and a piece of metal whose lack of homogeneity became noticeable by means of the x-rays. This photograph of a specimen of metal is the source of all our uses for x-rays in metallurgy. Finally, Röntgen hazarded the tentative suggestion that x-rays are longitudinal vibrations in the ether. . . .

A word should be said regarding the suggestion, frequently made, that the discovery was an accident. Years later Middleton in America, who had been one of Röntgen's students at the time, stated that the discovery was made because Röntgen happened to mark the page of a book which he was reading by placing a metal key between the pages. By accident also he happened to lay this book on a photographic plate. Later, when he developed the plate, presto, there was the shadow of the key! Perhaps this story demands a little too much of the element of coincidence. It should also be remembered that Middleton was only a student, and even Röntgen's assistants did not know what he was searching for. Seven months after discovery MacKenzie Davidson asked Röntgen what he was doing with the Hittorf tube when he made the discovery. Röntgen answered: "I was looking for invisible rays". It seems just to conclude that Röntgen knew what he was looking for, though he could hardly have foreseen its properties.

At the historic lecture on January 23 to which I have already referred Röntgen described his early attempts to take x-ray photographs through his laboratory door. At the end of the lecture Röntgen took an x-ray photograph of the hand of the chairman, von Koelliker, and the latter proposed that in future the rays should be called "Röntgen's rays".

REACTION TO THE DISCOVERY IN THE SCIENTIFIC AND SOCIAL WORLDS

The reaction to the discoveru was immediate. The news leaked out to the Vienna *Presse*, from which it was copied by other papers, including the London *Standard*. From the *Standard* the world cable was sent on January 6. The news appeared in the American Press on January 8. The *Saturday Review* had a detailed description on January 11, *L'Illustration* on January 25; and the *Literary Digest* on the same day. The first mention of the discovery which I have been able to find in the British or American Press occurred in *The Lancet*. The comments of this journal are interesting. In its first leader on January 11 it treated the whole matter as a Dickensian joke. A week later, subsequent to the confirmation by Mr. A. A. Campbell Swinton of the practicability of obtaining an x-ray photograph of the human hand, this journal unbent to the extent of saying "the possibility of the application of this discovery as an aid in medical and surgical practice is a shade nearer probability". By the 25th it agreed that the discovery had been completely confirmed, and mentioned with apparent gratification that "the application of this remarkable phenomenon to the discovery of bullets and abnormalities in the structure of bone has already been made, with very promising results". The *British Medical Journal*, having had the advantage of a week's careful consideration in avoiding a precipitate decision, published an article by Professor Arthur Schuster of Manchester on January 18. Professor Schuster had seen x-ray photographs which Röntgen had sent him, and he had no hesitation in saying that a most important discovery had been made. He also said that it was not necessary to enter into "the many possible medical applications which this photograph opens out". By February 1 the *British Medical Journal* was able to announce, in a long and most enthusiastic leader, that Professor Lannelongue of the Trousseau Hospital, assisted by Oudin and Barthélemy, had already x-rayed his cases, and had submitted to the Academy several negatives of human limbs, one showing a diseased femur, and another tuberculous dactylitis. The writer of this leader was emphatic that the rays would prove valuable in the diagnosis of obscure fractures and internal lesions generally, but he regretted that they could not be focused by lenses. *Nature* announced the discovery on January 16, and, as I said previously, the following week it printed the first English translation of the *Preliminary Communication*. The *New York Medical Record* passed from a state of suspended animation on February 1 to a condition of the most rosy optimism on February 15. After a brief latent period all journals were most enthusiastic.

There appears to have been considerable misconception in the early weeks regarding the real possibilities and uses of x-rays. I have read very many articles which appeared during these first few months, and most of them use the term "photography", which is strictly a misnomer. By March 10 Mr. Justice Wills was suggesting the term "scotography", and a few days later the *British Medical Journal* had a leader under the heading *Wanted a Name: New Photography*. "Skiography" was suggested, but the writer found "radiography" and "actinography" a trifle vague. Later writers suggested "kathograph" and "kathography". There were many other suggestions, but for the time being the new procedure remained as much

meat for the orthodox photographer as for the physician. Sensible suggestions very soon appeared to the effect that much technical skill was required, and that the actual exposures should be performed by experts. The other common misconception in all circles arose out of the fact that few understood the real possibilities of x-rays in rendering practicable the takings of an x-ray film with a relatively short exposure, and that this exposure might be subsequently shortened by improvements in the plant. At that time many x-rays of hands were taken with exposures of a few minutes. Nevertheless, a number of communications appeared pointing out that penetration could be obtained by other types of rays. On March 10 Mr. Lascelles-Scott sent to *The Times* a print from a negative made by these emanations —a "vibrograph", as he called it. The fact that the exposure was three and a half weeks rather altered the possibilities of the method in the domain of medicine.

It would seem that the attitude of the popular Press had much influence on the future development of the new methods. Journals in all countries had comments and jokes on the x-rays, and these served to make people interested, and stimulated them to ask their physicians to take x-ray pictures if they were in doubt. These comments often illustrate the misconceptions to which I have referred. For example, early in 1896 a photographer sent a customer an x-ray picture of a needle embedded in a human foot. He received the following reply: "Photograms received, very tame. Send more sensational ones, such as interior of the belly, backbones, brains, liver, kidneys, head, lungs, etc." By June a Miss Willard, a prominent temperance worker in the United States, was saying: "I believe the x-rays are going to do much for the temperance cause. By this means drunkards and cigarette smokers can be shown the steady deterioration of their systems, which follows the practice—and seeing is believing!" There was obviously a belief that some sort of waistcoat pocket x-ray apparatus might be developed, and a progressive London firm even advertised x-ray-proof underclothing. An Assemblyman from New Jersey actually introduced on February 19, 1896, a bill into the House at Trenton, N.Y., "prohibiting the use of x-rays in opera glasses in theatres". The same idea is expressed in the delightful cartoon in *Punch* of March 7, 1896.

DEVELOPMENTS IN THE MEDICAL APPLICATIONS OF X-RAYS

As has already been mentioned, the first x-ray photograph of the human body taken in this country by Röntgen's method was made by Mr. A. A. Campbell Swinton and Mr. G. Stanton in the second week of January 1896. The exposure was four and a half minutes. According to Pullin, Swinton's first x-ray of the human hand was made on January 7, the day after the announcement of the discovery by Röntgen, and the exposure was twenty minutes. It was reproduced in *Nature* on January 23, was demonstrated at the Physical Society on January 24, and on February 13 at a lecture before the London Camera Club. By January 25 Swinton had announced that lantern slides of this x-ray were available, and shortly afterwards he opened a laboratory for x-ray work in Victoria Street. By February 1 Neusser in Vienna had obtained x-rays of gall-stones in the gall-bladder, and a calculus in the urinary bladder. *The Lancet* was now proclaiming that English investigators must not be behind their co-workers abroad in the practical application of the discovery. Dawson Turner in Edinburgh showed a series of x-rays on February 5. One of the first surgical applications to be reported was that of a bullet in a boy's wrist, treated and written up by Sir Robert Jones and Sir Oliver Lodge. On February 24 Sydney Rowland, of St. Bartholomew's Hospital, gave a demonstration before the Medical Society of London. Hall Edwards in Birmingham had localized a needle and a bullet by means of the x-rays; he also produced an x-ray of a vertebral column. At Aberdeen MacKenzie Davidson had also carried out similar work by the middle of February. Silvanus Thompson, Oliver Lodge, Schuster and other great physicists were taking much interest in the application of the method to medicine, and Silvanus Thompson soon became the first President of the Röntgen Society. One of the most energetic of the early British workers was Dr. John MacIntyre of Glasgow, who was the pioneer of fluoroscopy by means of his cryptoscope. In addition to his abundant work on the bony structure of the limbs, he obtained distinct shadows of the vertebral column and ribs. By April for his cryptoscope he was using calcium tungstate, which had been recommended for this purpose by Edison after tests on eighteen hundred substances. Edison himself probably used the stereoscopic screen. In examining the antrum of Highmore MacIntyre tried putting small x-ray tubes in the mouth, and the screen outside. He paid great attention to the degree of hardness of his tubes, and he sometimes kept the air-pump connected in order to obtain a correct vacuum. He pointed out that a tube can be restored to its correct condition by the use of a Bunsen burner. In November 1896 MacIntyre was the first to use a succession of x-ray pictures of moving objects, *viz.* a frog's leg in motion, and he was also the first to devise the method of photographing the fluoroscopic screen which is now used in miniature radiography. He was able to obtain an x-ray with a single interruption—he had indeed done this in April—and he was therefore the founder of x-ray cinematography. During the year 1896 alone MacIntyre published eighteen papers on x-rays. Sir Herbert Jackson chose potassium platino-cyanide as the salt

which gives the best results, and in March 1894 he devised the first focus tube. . . .

From the earliest days there are suggestions regarding the use of x-rays in treatment. On February 1, Lyon had a letter in *The Lancet* in which he suggested that pulmonary tuberculosis might be treated in this way, but three weeks later he reported that he had experimented with cultures of diphtheria and tubercle bacilli, and that the x-rays had no germicidal effect. On February 29 Professor Delépine reported that with Professor Schuster he had carried out experiments to test the effect of x-rays on the cholera vibrio, *Bacillus coli* and *Bacillus typhosus* respectively; all results were negative. The first successful use of the rays in treatment was made by L. Freund of Vienna in November 1896. The patient was a girl with a pigmented birthmark. From then on numerous cases were treated by various modifications of the method. There were many reports of attempts to treat chronic fatal diseases with x-rays. For example Despeignes of Lyons claimed that he had obtained marked improvement of a cancer of the stomach by two half-hour sittings daily for two or three weeks. Early reports of risks to operators came from Edison's laboratory. Daniel found that in a patient who had an exposure of one hour for an x-ray of the skull, there resulted an area of epilation of the scalp, two inches in diameter. In July 1896 Marcuse reported an experiment carried out on a young man, who received one or two doses (each of five to ten minutes) daily for four weeks on his scalp. Alopecia was followed by erythema, conjunctivitis, and then excoriation of skin over the back and chest. It was soon realized that the dermatitis resulting from x-rays was very intractable. The years have brought their victims, and at least two books have been devoted to biographies of these martyrs to science. It is worthy of note that Röntgen, for purely scientific reasons, did most of his observations from inside a lead cabinet. So far as I am aware he never suffered any ill-effects from the rays. . . .

During these early days a number of advances were made in the more mechanical aspects of the plant. Tube holders were a difficulty. There are some grounds for thinking that the Italians were the first to use the rays in warfare, but certainly they were used first on a considerable scale by the British in the Nile expedition of 1896.

RÖNTGEN'S CLOSING YEARS

On March 3, 1896, the University of Würzburg conferred on Röntgen the honorary degree of Doctor of Medicine. In April he accepted the Royal Bavarian Order of the Crown, but declined to use the particle "von", which went with it. In November of the same year he was awarded the Rumford Medal of the Royal Society. During the war he sacrificed this medal to Germany's demand for gold, but it is told by Margret Boveri that he later regretted his action. His second communication on the x-rays, of March 8, 1896, deals with the discharge of electrified bodies by the x-rays. He noticed that air through which the rays had been passed retained this property of discharging electrified bodies for some time after it had been actually subjected to the rays. He extended his view that x-rays could arise in other materials besides glass, and he expressed the tentative opinion that any solid, and possibly liquids and gases as well, might serve as their origin. In his third communication (1897) Röntgen dealt with a comparison of the intensity of radiation of two discharge tubes, and the value of the transparency of certain materials for rays produced from different tubes. All bodies are more transparent for the rays of a harder tube than for those of a softer one. He dealt also with the spontaneous hardening of tubes, and he stated that he had so far no evidence of the diffraction of the rays.

A survey of the whole of Röntgen's papers shows that his output fell rapidly after this period. During the years 1898 to 1921 he wrote only eight papers. It would seem that this result was associated with his transfer to Munich. In 1900 he accepted the post of Professor and Director of the Physical Institute in the University of that city. There is no clear explanation of his decision to go to Munich, but Dr. H. P. Bayon, who took a degree in Würzburg in 1902, informs me that official pressure was brought to bear on Röntgen by the Bavarian Government, which wanted his name to dignify the capital of that State. Fräulein Boveri says that after 1900 fame and shyness raised a wall around Röntgen, through which an opening could be made occasionally, but which remained essentially intact until his death. The first Nobel Prize was awarded to him in 1901, and many other honours were showered upon him. During the years 1909 to 1913 he was not in good health, and he had two attacks of hæmoptysis.

Fräulein Boveri also mentions that the rumour had preceded him to Munich to the effect that he was difficult to get on with. To quote her words, she says that "if he did not agree with a person, he could be gruff and even rude". There seems little doubt that his rejection of the particle "von" to which he was entitled by the Bavarian honour which had been conferred on him, had not been well received in the court circles of Munich. Würzburg had been his spiritual home. Röntgen died on February 10, 1923, at the age of 77 years.

RÖNTGEN'S PLACE IN HISTORY

It is as yet too early to determine the place of Röntgen in the history of science. Glasser, who is an enthusiast, sums up his attitude to scientific investigation in the following passage:

"The salient feature of Röntgen's work, which makes him an excellent representative of classicism, was his persistence and his critical honesty in making observations and measurements. He approached the solution of physical problems with great acuity and relentless thoroughness. Over and over again he worked out new control experiments in order to convince himself thoroughly of the absolute accuracy of the results which he had obtained, and with great scepticism he always warned against accepting any hypothesis which was not based upon sound experimental evidence. Therefore the results of his work which were published in his papers are distinguished by a rare reliability, combined with remarkable classical brevity and simplicity. Röntgen was an experimental physicist in the truest sense of the word."

On the other hand, these features alone without a succession of brilliant achievements do not indicate genius. Many outstanding physicists in this country consider that Röntgen's other work was not of the same order as that associated with his discovery of x-rays. It is undeniable that the achievements of men such

as Sir William Crookes, Sir J. J. Thomson and Sir Ernest Rutherford were consistently more valuable in the development of atomic physics. The stage was set for the discovery of x-rays, and Röntgen was the actor chosen by fate to take the cue. Had he failed to do so, the discovery would certainly have been made by another. Even though this is admitted, the value of his work is in no way diminished, and his fame is secure as one of the greatest of mankind's benefactors during the nineteenth century.

The General Secretary's Page

To every member of the Association, I would like to say, Happy New Year.

To you who are still in His Majesty's service, we at home hope for your early and safe return.

To those who have put aside the uniform to resume the activities of civil life, may we express the hope that your fondest anticipations will find expression and satisfaction in peace time service.

May we also congratulate and greet that great army of splendid men and women of our profession who for six long years kept the torch of medical light and leadership shining brightly throughout the length and breadth of our land.

To all of our far flung family and to those who are dear to them, may we say, in the language of Tiny Tim, "God Bless Us Every One".

The year which has closed will long be remembered in history as the year which saw the cause of freedom and righteousness crowned and enshrined while the demon forces of hate and evil were encircled and crushed,—never, please God, to raise their slimy heads again. So mote it be. And what a noble and notable contribution Medicine made in the long struggle!

Once again, let me say that I consider it a rare privilege to be permitted, through the medium of this page, to pay my humble respects to close upon five thousand Canadian doctors who put aside all personal desires and risked their lives in order that men might be free.

In Association affairs, 1945 had a number of interesting high lights.

The Annual Meeting in Montreal in June, with close upon 2,000 persons present, was indeed the outstanding event of the year. Scientifically and socially, the convention will long be remembered as one of the best in our history; and, to add to the joy of it, the weather man was kind, keeping the torrid heat under control while we were assembled.

In August of last year, the first much-talked-of Dominion-Provincial Conference was held in Ottawa, when a new fiscal deal was offered by the Dominion to the Provinces. It is doubtful if our profession is fully conscious of all the implications of the proposals, particularly the one dealing with health insurance. Members can find that proposal with all of its interesting details in the September, 1945, *Journal*. Go back and read it if you haven't already thoroughly familiarized yourself with its contents. A second Dominion-Provincial Conference was held in November. While no official announcement regarding health insurance emerged from that conference, it is understood that the Provinces asked for more time to study the proposals and indicated to the Dominion Government that they desired to institute health insurance in their own way and in their own good time. Ottawa apparently offered no serious objections, so health insurance may not be very near in any Province; *but*—and this is the important thing—Dominion and Provincial statesmen were agreed that health insurance is definitely desired in Canada and will surely come. When? Two years? Five years? Ten years? We do not know, as this page possesses neither inside information nor prophetic ability. However, the main thing is that we, the medical profession, must know what it is all about and guide the organization and distribution of medical care rather than be misguided and bewildered by those who, for various reasons, would gladly take out of our hands the formulation and direction of policy relating to health care.

There is much reason for optimism. Nationally and provincially, increasing numbers of our people appear to be familiarizing themselves with the problems; and, what is more, an earnest attempt has been made to acquaint Dominion and Provincial Governments with our thinking. This is all to the good and must continue and increase. Then and then only are we justified in assuming that we are on safe ground.

The year contained a mile-stone for the General Secretary which you will forgive me for mentioning. As I motored through the beautiful valley of Evangeline in Nova Scotia during the month of October, I completed one million miles of travel, accumulated in a period of twenty-seven and one-half years.

As we enter 1946, we are very conscious of the manifold problems which face a war torn world. Canada looks to the medical profession to do more than care for the health of the people. Canada looks to our profession for guidance and help in sane thinking and living.

Canadian medicine, in peace as in war, has an enviable record to maintain.

Association Notes

"THE VICTORY MEETING"

The Seventy-Seventh Annual Meeting to be held in the Banff Springs Hotel, Banff, Alberta, during the Week of June 10, 1945.

It will be recalled that, at the Montreal meeting, in 1945, General Council accepted an invitation for the Seventy-Seventh Annual Meeting to be held in Vancouver in June, 1946. Because of the limited hotel accommodation which it is anticipated will be available in Vancouver next June, it has been decided to transfer the meeting from Vancouver to Banff. This change has been made with the complete concurrence of Dr. Wallace Wilson, the President-Elect, and the Vancouver Committee on Arrangements. This meeting — appropriately called the "Victory Meeting"—is to be regarded as a meeting-at-large and not in any sense depriving Vancouver of its turn in the sequence of meetings. We are pleased to state, however, that the Vancouver Committee, ably assisted by their colleagues in Alberta, are looking after general arrangements.

It is doubtful if there is any place in the world more suitable for a convention in June than Banff, and, certainly, no more commodious accommodation could be found anywhere than in the Banff Springs Hotel. The C.P.R. has agreed to turn over the hotel in its entirety to us for this convention. Accommodation is available for 750 people. It is anticipated that the attendance at the convention will greatly exceed that number but every effort will be made, in adjacent hotels and stopping places, to accommodate all who wish to attend.

General Council will meet on Monday and Tuesday, June 10 and 11, the scientific program commencing on Wednesday morning, June 12, and continuing until noon on Saturday, June 15.

Members desiring to make hotel reservations are requested to address The Canadian Medical Association Housing Committee, Banff Springs Hotel, Banff, Alberta, stating expected time of arrival, number in your party, accommodation desired and length of time you propose to stay.

Please do not expect early confirmation of reservations as the hotel has been closed for several years and staff is only now being assembled. But in due time all applications for accommodation will be acknowledged.

It is expected that by next June railroad equipment will be available in sufficient supply to provide adequate travel accommodation for all who will be attending the convention.

For those from the East who wish to go on to the Coast, going one way and returning another, the railway companies will be glad to make the necessary arrangements.

Railway and hotel rates as will be in effect in June, 1946, are not immediately available but will be published later.

Miscellany

Penicillin Shortage

The shortage of penicillin for injection, which is causing resentment among physicians unable to secure this product for serious cases of disease, is due to "strikes, difficulty in maintaining production because of contamination during fermentation, increased export, the use of poor quality corn steep liquor and the manufacture of penicillin mixtures", according to the November 24 issue of *The Journal of the American Medical Association.*

The editorial stated that "steps are being taken to overcome the penicillin shortage. Export controls have been suggested to permit records of the quantity of penicillin leaving the United States. Directives giving hospitals first call on penicillin production have also been proposed. A higher grade of corn steep liquor is being sought."

The editorial suggested that a "step which should be undertaken by the manufacturers until the present shortage is alleviated is the discontinuance of doubtfully acting mixtures. Penicillin for injection purposes is truly a life-saving measure and its distribution should be given priority over the manufacture and distribution of over-the-counter items of less value."

Polar Bear—Beware!

The ingestion of polar bear liver by men and dogs has long been known to Eskimos and Arctic explorers to result in severe illness. Two different explorers' accounts report the loss of skin from head to foot of men who have ingested bear liver. More recent accounts have varied somewhat as to the severity of this illness. It is reported that 19 members of an expedition in 1913 became sick with the following symptoms and signs, after eating bear liver: drowsiness, severe headache, and vomiting during the first twenty-four hours, followed by peeling of the skin around the mouth with gradual spreading over larger areas. More recently, Doutt (*J. Mamm.*, **21**: 356, 1940) reported that he and a party of 6 others partook of freshly killed polar bear liver. On the following morning all were sick with violent headaches, nausea, and torpor. Recovery was more prompt with those who took laxatives; the others remained sick for two to three days. No peeling of the skin was noted in any of this group.

Previous attempts to identify the toxic principle of polar bear liver have not been successful. Recently, Rodahl and Moore (*Biochem. J.*, **37**: 166, 1943) reported that rats fed polar bear liver showed signs typical of hypervitaminosis A—roughening of the skin, and internal hæmorrhage. On analysis, polar bear liver was found to contain as high as 18,000 I.U. of vitamin A per gram of wet material. Calcula-

tions by the authors on the basis of toxicity to rats indicate that about 7,500,000 I.U. of vitamin A would be required to have a similar effect on man. This amount would be present in about 375 gm. of bear liver, which is not an excessively large portion to be consumed at a single meal.

While the results of the rat feeding experiments were not as striking as might be hoped for, since only a few animals would eat the bear liver, the authors feel that there is no reason to look beyond vitamin A for the cause of toxicity in man, although other substances are not excluded by this study.

—*Nutrition Reviews.*

Medical Societies

The Canadian Physiological Society

The Canadian Physiological Society held its Ninth Annual Meeting at Queen's University, Kingston, Ontario, on November 2 and 3, 1945.

The following officers were elected: *President*—H. Wasteneys, University of Toronto; *Secretary*—R. L. Noble, McGill University; *Treasurer*—E. Boyd, Queen's University.

The following papers were presented:

ASCORBIC ACID METABOLISM AFTER TRAUMA IN MAN.—W. A. Andreae (introduced by J. S. L. Browne). McGill University Clinic, Royal Victoria Hospital, Montreal.

The 24-hour urinary excretion of ascorbic acid was followed in a group of 23 patients whose daily intake of this vitamin was kept constant by supplements of crystalline ascorbic acid. Amounts of 150 to 1,000 mgm. were administered to individual subjects. Whole blood and white blood cell ascorbic determinations were carried out at various intervals throughout the period of study.

The ascorbic acid retention of patients suffering from burns or fractures was greatly increased during the period immediately following damage. A prolonged and increased retention such as this was not observed in normal subjects maintained upon equally high ascorbic acid intake. In the patients studied, this high retention, relative to the intake, could not be attributed to: (*a*) a previous nutritional deficiency, (*b*) faulty absorption or impaired excretion of ascorbic acid, (*c*) retention in the tissues or in œdema-fluid, (*d*) excretion in the dehydro form, (*e*) a rapid destruction of the ascorbic acid in the urine after excretion. The ascorbic acid concentration in blood decreased during the initial 24 hours after the injury in spite of high ascorbic acid intake. It appears, therefore, that the abnormally high amount of ascorbic acid retained in these patients was either utilized or destroyed. It was further found that the duration of the period of high retention was dependent upon the degree of injury as well as the level of ascorbic intake.

EFFECT OF QUININE AND ATABRINE ON THE PARASYMPATHETIC INNERVATION OF THE HEART AND ON THE CORONARY CIRCULATION.—B. P. Babkin and K. I. Melville, Departments of Physiology and Pharmacology, McGill University, Montreal.

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Subjects clad in light clothing without a coat and with shirt sleeves turned up to above the elbow sat in a room 4° to 10° C. for 15 to 73 minutes. The radial artery was punctured by a 23 gauge hypodermic needle containing a copper-constantan couple. Temperatures recorded in the radial artery were 28.9° (15 minutes' exposure), 28.7° (20 minutes), 21.1° (51 minutes), 28.1° (56 minutes) and 22.3° (73 minutes). The temperature of blood in peripheral vessels in the limbs can therefore fall to very low levels, allowing a considerable supply of blood and oxygen to the area with relatively little external heat loss.

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Association Notes

"THE VICTORY MEETING"

The Seventy-Seventh Annual Meeting to be held in the Banff Springs Hotel, Banff, Alberta, during the Week of June 10, 1945.

It will be recalled that, at the Montreal meeting, in 1945, General Council accepted an invitation for the Seventy-Seventh Annual Meeting to be held in Vancouver in June, 1946. Because of the limited hotel accommodation which it is anticipated will be available in Vancouver next June, it has been decided to transfer the meeting from Vancouver to Banff. This change has been made with the complete concurrence of Dr. Wallace Wilson, the President-Elect, and the Vancouver Committee on Arrangements. This meeting — appropriately called the "Victory Meeting"—is to be regarded as a meeting-at-large and not in any sense depriving Vancouver of its turn in the sequence of meetings. We are pleased to state, however, that the Vancouver Committee, ably assisted by their colleagues in Alberta, are looking after general arrangements.

It is doubtful if there is any place in the world more suitable for a convention in June than Banff, and, certainly, no more commodious accommodation could be found anywhere than in the Banff Springs Hotel. The C.P.R. has agreed to turn over the hotel in its entirety to us for this convention. Accommodation is available for 750 people. It is anticipated that the attendance at the convention will greatly exceed that number but every effort will be made, in adjacent hotels and stopping places, to accommodate all who wish to attend.

General Council will meet on Monday and Tuesday, June 10 and 11, the scientific program commencing on Wednesday morning, June 12, and continuing until noon on Saturday, June 15.

Members desiring to make hotel reservations are requested to address The Canadian Medical Association Housing Committee, Banff Springs Hotel, Banff, Alberta, stating expected time of arrival, number in your party, accommodation desired and length of time you propose to stay.

Please do not expect early confirmation of reservations as the hotel has been closed for several years and staff is only now being assembled. But in due time all applications for accommodation will be acknowledged.

It is expected that by next June railroad equipment will be available in sufficient supply to provide adequate travel accommodation for all who will be attending the convention.

For those from the East who wish to go on to the Coast, going one way and returning another, the railway companies will be glad to make the necessary arrangements.

Railway and hotel rates as will be in effect in June, 1946, are not immediately available but will be published later.

Miscellany

Penicillin Shortage

The shortage of penicillin for injection, which is causing resentment among physicians unable to secure this product for serious cases of disease, is due to "strikes, difficulty in maintaining production because of contamination during fermentation, increased export, the use of poor quality corn steep liquor and the manufacture of penicillin mixtures", according to the November 24 issue of *The Journal of the American Medical Association.*

The editorial stated that "steps are being taken to overcome the penicillin shortage. Export controls have been suggested to permit records of the quantity of penicillin leaving the United States. Directives giving hospitals first call on penicillin production have also been proposed. A higher grade of corn steep liquor is being sought."

The editorial suggested that a "step which should be undertaken by the manufacturers until the present shortage is alleviated is the discontinuance of doubtfully acting mixtures. Penicillin for injection purposes is truly a life-saving measure and its distribution should be given priority over the manufacture and distribution of over-the-counter items of less value."

Polar Bear—Beware!

The ingestion of polar bear liver by men and dogs has long been known to Eskimos and Arctic explorers to result in severe illness. Two different explorers' accounts report the loss of skin from head to foot of men who have ingested bear liver. More recent accounts have varied somewhat as to the severity of this illness. It is reported that 19 members of an expedition in 1913 became sick with the following symptoms and signs, after eating bear liver: drowsiness, severe headache, and vomiting during the first twenty-four hours, followed by peeling of the skin around the mouth with gradual spreading over larger areas. More recently, Doutt (*J. Mamm.*, **21**: 356, 1940) reported that he and a party of 6 others partook of freshly killed polar bear liver. On the following morning all were sick with violent headaches, nausea, and torpor. Recovery was more prompt with those who took laxatives; the others remained sick for two to three days. No peeling of the skin was noted in any of this group.

Previous attempts to identify the toxic principle of polar bear liver have not been successful. Recently, Rodahl and Moore (*Biochem. J.*, **37**: 166, 1943) reported that rats fed polar bear liver showed signs typical of hypervitaminosis A—roughening of the skin, and internal hæmorrhage. On analysis, polar bear liver was found to contain as high as 18,000 I.U. of vitamin A per gram of wet material. Calcula-

tions by the authors on the basis of toxicity to rats indicate that about 7,500,000 I.U. of vitamin A would be required to have a similar effect on man. This amount would be present in about 375 gm. of bear liver, which is not an excessively large portion to be consumed at a single meal.

While the results of the rat feeding experiments were not as striking as might be hoped for, since only a few animals would eat the bear liver, the authors feel that there is no reason to look beyond vitamin A for the cause of toxicity in man, although other substances are not excluded by this study.

—*Nutrition Reviews.*

Medical Societies

The Canadian Physiological Society

The Canadian Physiological Society held its Ninth Annual Meeting at Queen's University, Kingston, Ontario, on November 2 and 3, 1945.

The following officers were elected: *President*—H. Wasteneys, University of Toronto; *Secretary*—R. L. Noble, McGill University; *Treasurer*—E. Boyd, Queen's University.

The following papers were presented:

ASCORBIC ACID METABOLISM AFTER TRAUMA IN MAN.—W. A. Andreae (introduced by J. S. L. Browne). McGill University Clinic, Royal Victoria Hospital, Montreal.

The 24-hour urinary excretion of ascorbic acid was followed in a group of 23 patients whose daily intake of this vitamin was kept constant by supplements of crystalline ascorbic acid. Amounts of 150 to 1,000 mgm. were administered to individual subjects. Whole blood and white blood cell ascorbic determinations were carried out at various intervals throughout the period of study.

The ascorbic acid retention of patients suffering from burns or fractures was greatly increased during the period immediately following damage. A prolonged and increased retention such as this was not observed in normal subjects maintained upon equally high ascorbic acid intake. In the patients studied, this high retention, relative to the intake, could not be attributed to: (*a*) a previous nutritional deficiency, (*b*) faulty absorption or impaired excretion of ascorbic acid, (*c*) retention in the tissues or in œdema-fluid, (*d*) excretion in the dehydro form, (*e*) a rapid destruction of the ascorbic acid in the urine after excretion. The ascorbic acid concentration in blood decreased during the initial 24 hours after the injury in spite of high ascorbic acid intake. It appears, therefore, that the abnormally high amount of ascorbic acid retained in these patients was either utilized or destroyed. It was further found that the duration of the period of high retention was dependent upon the degree of injury as well as the level of ascorbic intake.

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to drink, were protected against otherwise fatal nephrosclerosis, due to 19 days' subcutaneous treatment with 30 mgm. of LAP per day if, instead of the usual "Purina" fox chow, they were maintained on a high carbohydrate food ("Pablum", produced by Mead Johnson & Co., Ltd., Belleville, Ont., which contains 70% carbohydrate and 15% protein).

It appears that if the carbohydrate content of the diet is increased at the expense of the protein content, the resistance of the rat against experimental nephrosclerosis and allied vascular phenomena is greatly augmented.

SULFONAMIDES AND EGG-SHELL FORMATION IN THE DOMESTIC FOWL.—R. Bernard and Paul Genest (introduced by L.-P. Dugal), Department of Biology, Laval University, Quebec.

THE PRESENCE AND ACTION OF ACETYLCHOLINE IN EXPERIMENTAL TRAUMA OF THE BRAIN.—Murray B. Bornstein (introduced by H. H. Jasper), Montreal Neurological Institute.

THE ASCORBIC ACID CONTENTS OF NAVAL DIETS.—J. Campbell and E. J. Reed (by invitation), R.C.N. Medical Research Division, Department of Physiology, University of Toronto.

The ascorbic contents of the foods served in representative ships and establishments of the Naval Service were determined. The amounts of ascorbic acid thus found by determinations were generally lower than the amounts found by calculations.

The daily foods served for one man on the ships in harbour contained 81 mgm. of ascorbic acid, which was the highest average amount found. In the shore establishments the average intake was about 43 mgm. in 1944 and 59 mgm. in 1945. The amounts of ascorbic acid in the diets of ships at sea were apparently less than in the diets in harbour.

The distribution of ascorbic acid in the various foods of the diet was determined. The contributions of the citrus fruits and their juices, tomatoes and tomato juice and fortified apple juice to the ascorbic acid content of the diets were most important, as these foods furnished over 50% of the total.

THE STABILITY OF ASCORBIC ACID IN SOLUTION.—J. Campbell and G. W. Tubb (by invitation), Royal Canadian Naval Medical Research Division, Department of Physiology, University of Toronto.

THE FATE OF INTRAVENOUSLY INJECTED STARCH.—Lucille Carlton (by invitation) and O. F. Denstedt, Department of Biochemistry, McGill University, Montreal.

THE KINETICS OF LYSOLECITHIN HÆMOLYSIS.—H. B. Collier, Department of Biochemistry, Dalhousie University, Halifax.

MEASUREMENT OF RELATIVE BRAIN VOLUME BY MOISTURE DETERMINATION.—K. A. C. Elliott and H. Jasper.

PYRUVIC ACID AND THE BALANCE BETWEEN AEROBIC AND ANAEROBIC METABOLISM IN BRAIN.—K. A. C. Elliott, Montreal Neurological Institute.

THE EFFECT OF DI-GLYCERALDEHYDE ADMINISTERED TO THE INTACT ANIMAL.—Ewald S. Goranson (introduced by C. H. Best), Department of Physiology, University of Toronto.

THE FUNCTIONS OF PARIETAL CELLS AND OF FOVEOLÆ IN THE REPLACEMENT OF GASTRIC SURFACE EPITHELIUM.—Rhoda Grant, Physiological Department, McGill University, Montreal.

THE ADRENO-, CARDIO- AND RENOTROPHIC EFFECT OF LYOPHYLIZED ANTERIOR PITUITARY IN THYROIDECTOMIZED RATS.—Eleanor Clarke Hay, Department of Anatomy, McGill University, Montreal.

A COLORIMETRIC METHOD FOR THE ESTIMATION OF REDUCING STEROIDS.—R. D. H. Heard and H. Sobel (by invitation), Department of Biochemistry, McGill University, Montreal.

THE LIPID SOLUBLE REDUCING SUBSTANCES OF URINE AS A POSSIBLE INDEX OF ADRENAL CORTICAL FUNCTION.—R. D. H. Heard, H. Sobel (by invitation) and E. H. Venning, Department of Biochemistry, McGill University, and the University Clinic, Royal Victoria Hospital, Montreal.

ELECTRONEURONOGRAPHY IN PERIPHERAL NERVE LESIONS.—Herbert H. Jasper, Montreal Neurological Institute.

EFFECTS OF VARIOUS IRRIGATION FLUIDS ON THE EXPOSED BRAIN.—Herbert H. Jasper and K. A. C. Elliott (by invitation), Montreal Neurological Institute.

ELECTROMYOGRAPHY IN PERIPHERAL NERVE LESIONS.—Herbert H. Jasper, Montreal Neurological Institute.

EXPERIMENTS ON THE SEMICIRCULAR CANALS OF A FLATFISH.—W. H. Johnson, Department of Zoology, University of Western Ontario, London.

THE EFFECT OF TEMPERATURE ON THE RESPIRATORY RATE OF FUNDULUS.—B. N. Kropp, Department of Anatomy, Queen's University.

THE INFLUENCE OF BIOTIN UPON THE RELATIVE LIPOTROPIC EFFECTS OF CHOLINE AND INOSITOL.—C. C. Lucas, Jessie H. Ridout, Jean Patterson and C. H. Best, Banting and Best Department of Medical Research, University of Toronto.

A STUDY OF THE TOXICITY OF SOME EXPLOSIVE COMPOUNDS.—G. H. W. Lucas and A. W. Ham, Department of Pharmacology and Anatomy, University of Toronto.

The toxicity of several nitro explosive compounds was studied on animals in order to ascertain how these products would affect workers in powder and shell filling plants during the war. The explosives were applied in ointment form to the shaved backs of pigs, guinea pigs and rabbits or were given in suitable doses by mouth. The effect of

diet in relation to these explosives was also investigated. It was found that an anæmia practically always occurred when these compounds were administered. Liver changes were slight, if any. Some investigations were made on the blood of plant workers.

THE EFFECTS OF PYRIDOXINE, PYRIDOXAL AND PYRIDOXAMINE UPON THE SYNTHESIS OF FAT FROM PROTEIN.—M. L. MacFarland (by invitation) and E. W. McHenry, Department of Nutrition, School of Hygiene, University of Toronto.

EVIDENCES OF INCREASE IN THE CAPACITY OF THE PULMONARY ARTERIES AND VEINS OF DOGS, CATS AND RABBITS DURING INFLATION OF THE FRESHLY EXCISED LUNG.—Charles C. Macklin, Department of Histology and Embryology, University of Western Ontario.

PLASMA PHOSPHATASE OF RACHITIC CHICKS AND ITS QUANTITATIVE RELATIONSHIP TO THE SEVERITY OF THE RACHITIC CONDITION.—Ilary Motzok (introduced by A. M. Wynne), Department of Animal Nutrition, Ontario Agricultural College, and the Department of Biochemistry, University of Toronto.

AUDITORY THRESHOLDS OF NORMAL AND HARD-OF-HEARING SUBJECTS IN NOISE.—Mary E. Mounfield (by invitation) and John E. Goodwin, Banting and Best Department of Medical Research, University of Toronto.

THE EFFECTS OF CERTAIN CENTRALLY ACTING DRUGS ON GASTRIC SECRETIONS.*—R. L. Noble, Research Institute of Endocrinology, McGill University, Montreal.

A study has been conducted with the view to finding drugs which might specifically affect the brain centre controlling certain phases of gastric secretion. The central stimulation caused by insulin injections and the resulting secretion of gastric juice has been measured in cats having permanent gastric fistulæ. Some 15 barbiturates and related compounds, kindly supplied through the co-operation of Abbott laboratories and the Eli Lilly Company, have been tested for their ability to inhibit insulin induced secretion or to stimulate gastric secretion directly. Whereas inhibition of secretion follows anæsthetic doses of most compounds, certain drugs such as allyl (l-methyl butyl) imino thiobarbituric acid and especially (l-methyl butyl) ethyl acetyl thiourea prevented the secretory action of insulin although no hypnosis or untoward symptoms were associated with the dose used. The cumulative toxic action of repeated doses of these compounds requires extensive study before the treatment of such conditions as peptic ulcer can be attempted. Two substances, ethyl 3:3 di-methyl allyl barbituric acid and ethyl 1:3 dimethyl-l-butenyl barbituric acid, were found to cause marked stimulation of gastric secretion *per se*, this action apparently being due to a central stimulation.

OBSERVATIONS ON TYPES OF MOTION CAUSING VOMITING IN DOGS.*—R. L. Noble, Research Institute of Endocrinology, McGill University.

*This work is supported by a grant from the National Research Council of Canada.

THE INFLUENCE OF DIFFERENT URINE EXTRACTS ON GASTRIC SECRETION OBTAINED FROM DOGS FOLLOWING EXTIRPATION OF CERTAIN ENDOCRINE GLANDS.—T. L. Patterson, J. Kaulbersz (by invitation), D. J. Sandweiss (by invitation) and H. C. Saltzstein (by invitation), Department of Physiology, Wayne University College of Medicine and Harper Hospital, Detroit, Michigan.

THE APPLICATION OF LIVER FUNCTION TESTS TO LABORATORY ANIMALS.—Florence Robertson (by invitation) and O. F. Denstedt, Department of Biochemistry, McGill University, Montreal.

THE CHARACTERISTIC CHANGES IN NITROGEN METABOLISM AFTER DAMAGE.—Victor Schenker (introduced by J. S. L. Browne), McGill University Clinic, Royal Victoria Hospital, Montreal.

THE EFFECTS OF OXYGEN ON THE CIRCULATORY SYSTEM IN CONDITIONS OF ANOXIA AND ASPHYXIA.—G. W. Stavraky, Department of Physiology, University of Western Ontario Medical School, London.

THE INCREASE OF ASCORBIC ACID CONTENT OF THE TISSUES OF THE RATS EXPOSED TO COLD TEMPERATURES.—Mercedes Therien (by invitation) and Louis-Paul Dugal, Institute of Hygiene and Human Biology, Laval University.

DIETARY FACTORS AFFECTING SUSCEPTIBILITY IN EXPERIMENTAL SHOCK.*—C. Gwendoline Toby and R. L. Noble, Research Institute of Endocrinology, McGill University, Montreal.

EFFECT OF ŒDEMATIENS ANTITOXIN ON GUINEA PIGS INFECTED WITH SPORES OF CL. ŒDEMATIENS.—G. G. Waters and P. J. Moloney, Connaught Laboratories, University of Toronto, Toronto.

THE EFFECT OF VARIOUS BASES AND OF CHANGES IN TEMPERATURE ON THE POTENCY OF PENICILLIN.—R. A. Waud, C. Grant (by invitation), and B. F. Wallace (by invitation), Department of Pharmacology, University of Western Ontario, London.

LIPÆMIA, BLOOD LIPIDS, AND HEPARIN.—C. B. Weld, Department of Physiology, Dalhousie University, Halifax.

THE TRANSAMINATION ENZYME OF RAT KIDNEY.—H. L. Williams, Hamilton King Meek Memorial Laboratory, University of Western Ontario Medical School, London.

*This work is supported by a grant from the National Research Council of Canada.

La société médicale des hôpitaux universitaires de Québec

Une séance de cette société eut lieu vendredi, le 5 octobre, 1945.

PROBLÈMES QUE POSE LE DIAGNOSTIC ENTRE LE CANCER ET L'ULCÈRE DE L'ESTOMAC.—Jean-Paul Dugal.

Une lésion de l'estomac à type ulcéreux peut être bénigne et maligne. En fait 20% au moins de ces lésions sont de nature néoplasique. Rien dans la symptômatologie ne permet d'affirmer sûrement qu'il s'agit d'un cancer ou d'un ulcère. Il existe certains éléments de présomption basés sur la symptomatologie clinique, radiologique et gastroscopique; ils peuvent facilement induire en erreur. L'épreuve du traitement médical tel que proposé réduit considérablement les chances d'erreur. Tout malade porteur d'ulcère doit y être soumis, sauf les cas où la néoplasie est pratiquement certaine. Une étude de 55 lésions ulcéreuses de l'estomac est faite.

ANESTHÉSIE INTRA-VEINEUSE A L'ÉTHER.—Capt. Bernard Paradis.

1. Historique. 2. Différences au point de vue physiologique et pharmacologique entre l'éther par inhalation et l'éther par voie veineuse. 3. Constatations cliniques sur quinze anesthésies i.v. à l'éther, et appréciation de sa valeur.

ENDOMÉTRIOSE INGUINALE.—Jules Lavoie.

Sans être une rareté, l'endométriose à localisation inguinale donne lieu à une réelle difficulté de diagnostic. L'auteur rapporte une observation personnelle de cette affection chez une femme de 36 ans, mariée et n'ayant jamais eu d'enfants; le diagnostic fut fait par l'examen histopathologique de la pièce opératoire. La question de la pathogénie de l'endométriose en est une encore très discutée à l'heure actuelle, mais la théorie métastatique de Sampson pour expliquer la localisation inguinale de la maladie semble la plus plausible dans le cas présent, car l'examen microscopique révéla des ilots d'endométriose intraveineuse. Deux signes, la douleur et l'augmentation du volume de la tumeur au moment des menstruations, peuvent orienter le diagnostic, qui demeure toutefois très difficile à faire.

A PROPOS DES FRACTURES DU SCAPHOIDE CARPIEN.—L.-P. Roy et J.-L. Larochelle.

Les fractures du scaphoide carpien viennent en second lieu comme fréquence dans les traumatismes du poignet, immédiatement après les fractures de Colles. Dans les fractures récentes, le traitement consiste dans une immobilisation platrée remontant à la partie supérieure de l'avant-bras et prenant le pouce en abduction. Cette immobilisation doit être prolongée 3 à 4 mois en moyenne. Dans les fractures anciennes, le traitement varie avec l'ancienneté de la lésion, son aspect radiologique; il faut choisir entre l'appareil plâtré longtemps prolongé, les perforations osseuses de Bech, l'anthrodèse du poignet ou l'ablation de scaphoide totale ou partielle. Sur 26 cas traités, le résultat est excellent dans l'ensemble.

QUELQUES AMELIORATIONS DE LA TECHNIQUE CHIRURGICALE DES PROSTATECTOMIES SUS-PUBIENNES.—André Simard.

L'auteur signale trois dangers des prostatectomies sus-pubiennes: 1°. Chûte de tension chez un vieillard, par la perte massive de sang. 2°. La gangrène qui s'installe au pourtour de la plaie opératoire. 3°. Le séjour trop prolongé au lit.

L'auteur indique et discute les procédés nouveaux qu'il a mis à point pour pallier à ces dangers.

Une séance de la société médicale des hôpitaux universitaires de Québec tenue le 19 octobre 1945, à la Clinique Roy-Rousseau, à 8.30 hrs du soir.

LES PERVERSIONS INSTINCTIVES.—J.-Chs. Miller.

Après avoir rappelé la complexité de la vie instructive en psychologie humaine normale et ses tendances sociales moralisatrices, l'auteur démontre que, par suite de déviations constitutionnelles, héréditaires ou congénitales, on peut observer des agénésies du sens moral associées à d'autres perversions de la vie affective et même végétative. La vraie perversion instinctive est cependant très rare, et il faut tenir compte des perversions acquises tant au point de vue diagnostique que pronostique. La rééducation corrective est possible dans les perversions acquises, pendant qu'elle paraît très douteuse dans la forme constitutionnelle. Suit une présentation de différentes observations d'enfants et d'adultes.

ACCIDENT RARE AU COURS DU TRAITEMENT PAR L'ÉLECTRO-CHOC — ABCÈS PULMONAIRE.—A. Pelletier, Geo.-H. Larue et M. Samson.

Nous avons observé, au cours de 1945, deux cas d'abcès pulmonaire survenus au cours du traitement des psychoses par l'electro-choc. Les seules communications du genre déjà rapportées dans les Revues Médicales concernaient la Métrazolthérapie. La pathogénie donnée pour expliquer ces abcès ne peut être acceptée quand on provoque les chocs par un courant électrique.

Nous croyons que le médicament introduit dans les veines ou la manière qu'on le donne n'y sont pour rien. Ces abcès seraient plutôt la conséquence du ralentissement de la circulation et de la stase qui se produisent dans les poumons lors de la convulsion, ajoutée à l'apport microbien venant des voies respiratoires supérieures.

LE DÉLIRE AIGU.—Geo.-H. LaRue et A. Pelletier.

Syndrôme mental rare, très grave, à pathogénie encore mal connue. C'est une encéphalite sur-aigue, de nature toxi-infectieuse indéterminée, ou simplement endo-toxique. Syndrôme autonome qui ne devrait pas être confondu avec les autres psychoses toxi-infectieuses survenant au cours ou à la suite des maladies infectieuses. Le délirium tremens nous paraît devoir entrer dans la même catégorie et traité de la même manière. Le traitement est purement symptômatique. Combattre la déshydratation, stimulants.

L'insuline administrée avec sérum glucosé ne donne pas de meilleurs résultats que les traitements ordinaires. Sur 9 cas traités ainsi 5 sont décédés, 55%. Par contre, l'administration de l'insuline, en provoquant un petit choc hypoglycémique nous paraît une méthode beaucoup plus prometteuse.

Winnipeg Medical Society

The first meeting of the new season was held in the Medical College on October 19, with Dr. A. M. Goodwin, president, in the chair. It was probably the largest meeting of the Society; the physiology lecture room proved too small and a change had to be made to lecture theatre A. Service uniforms were much in evidence. Major A. Klass spoke on German surgery and Major Herbert Meltzer related an unusual case of Pick's disease. Both have been absent on service in the East and Europe for several years. The third speaker was Major J. N. Crawford who in November 1941, reached Hong Kong as senior medical officer of the Winnipeg Grenadiers and was a prisoner of the

Japanese from Christmas day 1941, until released a few weeks ago. His recital of Hong Kong experiences was moving, with an occasional note of humour.

On November 18, Sir Jack Drummond addressed the Society on Nutrition in Great Britain. Despite the inclement weather the attendance was good, and those present were keenly interested.

ROSS MITCHELL.

Correspondence

Science and Religion

To the Editor:

Thank you for giving me the opportunity to read Dr. Martin's article on "Religion and Medicine", and also for your invitation to comment on it.

I regret that I cannot do so beyond suggesting that your invitation is the equivalent of asking an astronomer to comment on the presentations of an astrologer. Dr. Martin's whole case rests entirely on his own individual faiths for which he presents no scientific support whatever as he should be expected to do when writing for a scientific journal. His whole article being merely a declaration of his own faith there is of course no answer. There is no answer to any faith except another faith. Scientific evidence has no status in this relationship. Science being free, changes, grows, develops and reaches out to previously unknown truths which may equally be called manifestations of God, at whatever cost to its previous certainties. In the advance towards truth the necessity of discarding obsolete attitudes is totally irrelevant.

This whole method is of course abhorrent to anyone tied permanently to any unchangeable belief, who thinks he already has all the answers, or in other words, knows all about God already.

G. B. CHISHOLM, M.D.

Ottawa, November 22, 1945.

Competency of the Valves of the Saphenous Vein

To the Editor:

It occurred to me that the competency of the valves of the saphenous vein could be tested by utilizing the pressure developed within the abdominal cavity on bearing down, and that such a test might be easier to carry out and interpret than the customary method of using a tourniquet.

The test, based on this principle, is carried out as follows. The patient is instructed to lie down, and the leg to be tested is raised. When the veins have become empty, he is told to bear down as if he were moving his bowels, and to maintain the pressure. If the valves are incompetent, the veins will fill up quite rapidly from the proximal end. I have found this test very satisfactory and easy to carry out.

M. LATTEY

Birch Hills, Sask.

The Multiplicity of Specialists

To the Editor:

You deplore our failure to register our opinion *re* current topics, as do our confrères in Britain. I agree with you. Hence this letter!

The following is a true account of a sequence of events in one of our metropolitan hospitals not long ago. A friend of mine, who is a medical doctor and wife of a salesman in moderate circumstances, was confined in the said hospital and delivered without difficulty of a healthy young boy. About the fifth day she asked her attending obstetrician if her child should be circumcised, and if a nævus on his buttocks required treatment. The obstetrician insisted on consulting a pædiatrician and after some argument, my friend agreed. The pædiatrician arrived and after examining the boy said, "I believe the baby should be circumcised, but of course you'll have to call in a surgeon for that; and the matter of the nævus must be left to the discretion of a skin specialist."

My friends were prepared to pay and did pay the usual obstetrician's fee, at specialists' rates. They were not however prepared to pay three other specialists for such paltry work which my medical friend could do for herself.

Comment on this is hardly necessary. It does show why many intelligent people are welcoming the present move towards some sort of socialized medicine. Rightly or wrongly, they believe that the practise of medicine as described above is not at all above the level of a "racket", and will be very glad to see an end put to it.

ARTHUR C. HILL

39 Dufferin Ave.,
Sherbrooke, Que.,
December 3, 1945.

Special Correspondence

The London Letter

(From our own correspondent)

THE NURSING CRISIS

Shortage of nurses still continues to be the most pressing of the medical problems in this country. A new recruiting campaign is shortly to be launched to see if anything can be done to fill the 33,000 estimated vacancies. An annual intake of nearly twice what was required before the war is now necessary despite the fact that far more nurses were registered in 1944 than in 1938.

Behind the nursing shortage lies an even more difficult problem, shortage of domestic staff. Nurses are being called upon more and more to undertake what are called "irrelevant" duties and the net result is that of every hundred girls who start nursing only forty actually finish the course. Conditions of life both for nurses and domestic workers are still deplorable in many hospitals and this probably ranks higher as a deterrent than details of pay.

Nurses for the tuberculosis service are especially short and such shortage is causing the closure of wards and the piling up of a waiting list which is reaching serious and dangerous proportions. Here the question of "risk" comes into the picture and the Ministry of Health has recently laid down certain standards of care which must be followed if the present sacrifice of the young nurse in the interest of the patient is to be stopped.

INDUSTRIAL MEDICINE

Some years ago the Trades Union Congress took the unprecedented step of approaching the General Medical Council to insist that more attention must be paid to industrial problems in the training of the doctor. The Royal College of Physicians earlier this year put forward a strong case for national industrial health service as an essential part of any new health service. Now the Association of Industrial Medical Officers has issued a report on the education of those who work in the field of industrial medicine and a Diploma on Industrial Health is recommended for doctors entering industry.

It is not merely a question of understanding and treating industrial disease: toxic hazards probably account for less than 5% of industrial disability. A proper understanding of the physiology and psychology of the workers and of the modern methods of resettlement and rehabilitation is of highest importance. In the coming years this country will need the work of every citizen and to keep the worker in health is a fine task for the large number of doctors who will, it is hoped, take up this job.

GETTING BACK TO NORMAL

Many of the medical schools celebrated the opening of the academic year with ceremonies which have been largely omitted since 1938. The Archbishop of Canterbury visited Westminister Hospital to give the inaugural address, and he emphasized that medical science was essentially a social science, with the unit of society as the family and the key position in the medical profession held by the family doctor.

At the Royal Free Hospital, Lord Moran gave the new medical women students some sound advice, especially on thinking for themselves and on maintaining a spirit of adventure. But the nearest approach to a peace-time celebration occurred on St. Luke's Day when the Royal College of Physicians of London held the Harveian Dinner with a great galaxy of guests including not only our own Prime Minister, who proposed the toast of the College, but also the Prime Minister of Canada as well as prominent members of the present and of the late government.

Such celebrations are not mere social functions. They show that leaders of the profession are anxious that doctors shall play an important part in the national life. Mr. Bevin, the Foreign Secretary, summed up the whole matter in a magnificent peroration when he appealed to the profession to place its "great ability to the fullest extent to the common service in order that this country may survive and still play its part in human destiny".

ALAN MONCRIEFF.

London, November, 1945.

* * *

(Dr. Moncrieff adds a note which we are only too sorry to receive as a valedictory. It is with great regret that we have had to accept his retirement as our London correspondent. Dr. Moncrieff's association with us for the last 18 years has been an unusually happy one. His assignment required not only journalistic ability but an insight and discretion which was never at fault, and his labours and unfailing interest in the *Journal* built up the most pleasant relationship. Our best wishes go to him for what we understand will be fresh responsibilities. —*Editor.*)

Extracts from Correspondence in other Journals

[*Topics which may seem to have become hackneyed may often be revived by someone for whom they have for one reason or another regained their liveliness. How much should patients be told about themselves is surely a very familiar and well worn question, but it is revivified by Major Hogarth in the "British Medical Journal" October 13, 1945.*]

Telling the Patient

"During a recent short visit to England I have had forcibly brought to my notice a matter which has often troubled me in the past because of its fundamental importance in the treatment of ill people. In my capacity as medical specialist I have been attached to a military hospital with a large out-patient department for a period of six weeks while awaiting my ship. What impressed me most while I worked in the out-patient department was not the obviously careful and detailed examinations and investigations lavished upon the patients by their unit doctor and by specialists (for most of the men had seen several specialists), but the fact that in only a small proportion did the patients possess accurate information regarding their particular illnesses. Most of them were quite uninformed about diagnosis, prognosis, and treatment, and when questioned would quickly show that they had their own ideas—quite inaccurate—based upon a few words picked up from their doctor or orderly.

"As an example of this I can remember a man of 20 who had weakness and wasting of muscles of one leg due to anterior poliomyelitis contracted at the age of 12 years. He had an unsuitable job in the Army involving excessive use of the leg, and, in consequence, he had some discom-

fort. He was first seen by a medical specialist, who correctly made the diagnosis of 'old poliomyelitis' and referred him to an orthopædic surgeon. He later decided that no orthopædic treatment was necessary. The patient, misinterpreting what he had overheard, decided that his condition had gone beyond the stage when treatment was worth while and, naturally enough, became extremely worried, both as regards his future in the Army and his future as a wage-earner. A five-minute interview in which the exact state of affairs was explained to him in simple language completely relieved his anxiety.

"I encountered exactly the same difficulty in an E.M.S. hospital during the first three years of the war. The young medical men working there were keen to reach an accurate diagnosis and to apply the correct treatment as soon as possible. Many of them, however, failed to appreciate the importance of the few moments necessary to explain to the patient the points about his illness which were important to him as a wage-earner and as one of a family. As a result of this, patients were apt to acquire a wrong idea of their illness from the mutterings and noddings of a group of doctors at the bedside. Surely it is a complete waste of experience, talent, and modern science if, through neglect of a simple basic principle, we are left with a correctly diagnosed and correctly treated but completely bewildered and apprehensive patient. Surely we can train ourselves to speak to patients in a language they understand and to make sure that they do understand what we are trying to tell them."

He is warmly supported in the following week (*British Medical Journal*, October 27) by Professor John Ryle, of Oxford:

"Major J. C. Hogarth's letter on this subject is timely and deserves more than a passing comment. Observations of the same kind have been made to me by a number of thoughtful Service medical officers—usually with unit experience—who have been frankly shocked by the impersonal methods which prevail in many Service and E.M.S. hospitals. I had frequent occasion to make similar criticisms, during the first three years of the war, as the result of my numerous contacts with E.M.S. and teaching hospital medicine.

"How have these strange habits of thought and action, this routine of intensive and often repeated investigation and multiple specialist opinions, but with so little said and done for a patient *as a person*, come to characterize hospital practice? What is the function of the physician, what is the object of medicine if it is not to help the patient's mind and body in every way possible and at every stage of his illness? There can be no greater disservice than to leave him puzzled or in the dark. It is a sad reflection on the trends of our clinical teaching in recent decades that institutional medicine should now so frequently be allowed to degenerate into a kind of mechanical bedside pathology; that it should prefer reports and labels to human histories, and diagnoses and treatments to 'treatment,' and delight so selectively in what is called the 'interesting' case. 'Examination, explanation, and reassurance' should be as much in the mind of the student and young doctor as 'inspection, palpation, percussion, and auscultation,' if—that is to say—he cannot be human without a mnemonic. . . . ."

and Major H. Harris in the same issue:

"How cordially I agree with Major Hogarth's suggestion that the patient be given constructive information about his complaint. I would go further, and suggest that therapy is incomplete until the disease is evaluated to him in terms commensurate with his intelligence, education, and emotional maturity, and until he is helped to adjust to it. . . . . .

"Much avoidable psychotherapy, suffering, and distrust of the medical profession could be prevented if more doctors—specialist or G.P.—were to spend the few moments necessary to complete their therapeutic effort by bringing the patient 'into the picture'. It would also help those of us who come after to get a reasonable medical history. I am continually being surprised by the number of intelligent young officers who have vague ideas about quite serious illnesses and who are naturally worried because no one has told them what to expect or what to do about it."

But Dr. E. Idris Jones at the same time has a slightly different point of view.

"Major J. C. Hogarth surely realizes that in the out-patient department of a hospital the patients are referred for an opinion by the general practitioner. The majority of these practitioners, I am sure from personal experience, would resent the out-patient physician discussing in detail the diagnosis, prognosis, and treatment with the patient. This is the function of the general practitioner, and it is the physician's duty, in my opinion, to communicate only with the doctor concerned. Only in exceptional cases and at the doctor's request should the physician discuss the diagnosis with the patient. Otherwise, surely, essential trust and harmony between patient and general practitioner are apt to be jeopardized."

Canadian Medical War Services

MEDICAL OFFICERS APPOINTED TO THE R.C.A.M.C. — ACTIVE FORCE

NOVEMBER, 1945

(*Previous sections in January, March, April, May, June, July, September, October, November and December, 1945.*)

SECTION LXI

Name	*Address*	*Date of Appointment*
Adey, A. B.,	Winnipeg	31-10-45
Anderson, J. R. F.,	St. Boniface, Man.	29-10-45
Brown, E. M.,	Saskatoon	30-10-45
Chmelnitsky, M.,	Winnipeg	29-10-45
Colpitts, G. E.,	Winnipeg	24-10-45
Dennis, J. W.,	Medicine Hat, Alta.	30-10-45
Dundee, J. C.,	Regina	24-10-45
Ferrier, R. A.,	Winnipeg	1-11-45
Friesen, L. V. C.,	South Saskatoon	16-7-45
Gorman, F. J. A.,	Winnipeg	25-10-45
Grant, W. M.,	Winnipeg	30-10-45
Gray, A. G.,	Winnipeg	29-10-45
Hebert, J. H. L.,	St. Boniface, Man.	31-10-45
Hubar, M.,	Halifax	6-9-45
Junek, V. D.,	Esterhazy, Sask.	26-10-45
Karlinsky, W.,	Winnipeg	25-10-45
Marchand, P.,	St. Trite, Que.	26-9-45
Mills, F. H. G.,	Winnipeg	30-10-45
Milroy, T. W.,	Indian Head, Sask.	24-10-45
McClatchie, S.,	Vancouver	1-8-45
McKenzie, J. G.,	Prince George, B.C.	30-10-45
MacTavish, J. E.,	Winnipeg	30-10-45
Newell, J. E.,	Portage la Prairie, Man.	25-10-45
Osborne, D. F.,	Winnipeg	25-10-45
O'Keefe, J. M.,	Winnipeg	1-11-45
Patterson, T. H.,	Belleville, Ont.	1-9-45
Squires, F. J.,	Winnipeg	29-10-45
Stevenson, J. D.,	Winnipeg	31-10-45
Thomson, A. E.,	Regina	26-10-45
Weir, E. F.,	Freeport, N.S.	6-9-45

MEDICAL OFFICERS STRUCK OFF STRENGTH OF THE R.C.A.M.C.—ACTIVE FORCE

NOVEMBER, 1945

SECTION LXII

Name *Address*	*Date struck off strength*
Adams, G. T., Montreal	29-10-45
Albert, D. J., Edmundston, N.B.	24-10-45
Anderson, J. L. M., Victoria	4-10-45
Armstrong, A. R., Burlington, Ont.	18-10-45
Beaubien, M. F., Montreal	11-10-45
Beauchamp, A. J., Edmonton	31-10-45
Bell, C. G., Lions Head, Ont.	26-10-45
Bensley, E., Montreal	18-10-45
Benson, R. A., Byron, London, Ont.	17-10-45
Bird, R. L., Belleville, Ont.	24-10-45
Bissett, E. D. R., Pine Falls, Man.	28-9-45
Boulter, W. L., Vancouver	26-10-45
Bowie, M. R., Essex, Ont.	23-10-45
Boyd, R. W., Calgary	27-10-45
Boyd, W. J., Ottawa	11-10-45
Bracken, E. J., Gananoque, Ont.	18-10-45
Bridge, J. W., Edmonton	31-10-45
Broadfoot, T. W. L., Fergus, Ont.	20-10-45
Brown, L. W., Ottawa	1-11-45
Brown, M. M., Winnipeg	19-10-45
Brunet, A. J., Montreal	17-10-45
Burke, D. T., Ottawa	19-10-45
Campbell, H. H., East Kilbride, Scotland	1-10-45
Canfield, J. H. O., London, Ont.	19-10-45
Card, L. W., Vancouver	3-10-45
Cardish, A. A., Toronto	31-10-45
Chisholm, J., Oakville, Ont.	20-10-45
Corrigan, C. E., Winnipeg	26-10-45
Cromar, C. D. L., Vermilion, Alta.	24-10-45
Dalziel, W. R., Toronto	23-10-45
Dingwall, R. W., Kingston	19-10-45
Donald, E. F., Edmonton	18-10-45
Downing, G. M., Otterville, Ont.	16-10-45
Dunlop, H. W., Kingston	15-10-45
Dyer, H. F., Hamilton	27-10-45
Eaglesham, D. C., Montreal	25-10-45
Earle, P. W., Mallorytown, Ont.	2-11-45
Elder, H. M., Montreal	12-10-45
Elkington, E. H. W., Victoria	5-10-45
Endicott, W. J., Traill, B.C.	29-9-45
Evans, C. C., Creighton Mine, Ont.	19-10-45
Ewart, H. T., Hamilton	1-11-45
Fahrni, G. S., Winnipeg	2-10-45
Fairfield, G. C., Winnipeg	22-10-45
Ferguson, G. G., Moose Jaw, Sask.	24-10-45
Foex, H. E., Chatham, Ont.	10-10-45
Forbes, G. R., Kentville, N.S.	16-10-45
Fowler, J. L. A., Toronto	25-10-45
Fowler, W.	16-10-45
Glass, W. E., Hamilton	23-10-45
Goddard, E. S., Toronto	6-11-45
Gordon, R. A., Toronto	27-10-45
Gray, N. M., Montreal	18-10-45
Gregory, R. A., Fairville, N.B.	20-10-45
Grenville, I. A., Toronto	14-11-45
Grieve, J. G., Stratford, Ont.	20-10-45
Gunn, W. R. L., Fort Frances, Ont.	16-10-45
Hacking, L. C., Regina	23-10-45
Hall, N. B., Campbell River, B.C.	5-10-45
Harvie, R. M., Midland, Ont.	10-10-45
Heggie, D. C., Brampton, Ont.	19-10-45
Hethrington, H., Toronto	27-9-45
Hewson, R. D., Olds, Alta.	9-10-45
Hill, W. H. P., Montreal	17-10-45
Hillsman, J. A. B., Winnipeg	25-9-45
Hobbs, G. E., London, Ont.	19-10-45
Houston, G. G., Charlottetown	23-10-45
Howes, E. W. McL., Toronto	2-11-45
Huggard, L. H. A. R., Vancouver	3-10-45
Ireland, J. A., Kamloops, B.C.	3-10-45
Johnson, C. H., Summerside	31-10-45
Johnston, D. W. B., Montreal	22-10-45
Johnston, F. D., Montreal	20-10-45
Jones, W. A., Ottawa	14-10-45
Jung, R., Washington, D.C.	1-11-45
Karefa-Smart, J. A. M., Montreal	3-10-45
Lepine, E. F., London, Ont.	18-10-45
Lewis, L., Medicine Hat, Alta.	2-11-45
Lindsay, J. G. K., Saskatoon	24-9-45
Long, R. C., Montreal	8-11-45
Luke, J. C., Montreal	13-10-45
Malcolm, F. F. P., Dartmouth, N.S.	18-10-45
Maloney, P. J., Ottawa	26-9-45
Meiklejohn, R. B., Toronto	23-10-45
Mirsky, S., Ottawa	11-10-45
Mitchell, H. S., Montreal	31-10-45
Muirhead, W. R., Carleton Place, Ont.	31-10-45
Mutrie, E. T., Elora, Ont.	13-10-45
MacDermot, P. N., Montreal	23-10-45
MacDonald, R. L., Toronto	13-10-45
MacDonald, S. A., Ceylon, Sask.	29-10-45
MacDougall, J. T., Indian Head, Sask.	12-10-45
McEachern, D. S., Montreal	12-10-45
McFetridge, J. G., Winnipeg	1-11-45
McGillivray, N. B., Toronto	25-10-45
McGoey, C. J., Woodmar, New York, U.S.A.	22-10-45
MacKenzie, D. W., Montreal	16-10-45
MacKenzie, K. R., Montreal	17-10-45
MacKenzie, W. F., Toronto	16-10-45
MacLeod, J. G., Finch, Ont.	30-8-45
MacPherson, G. B., Guelph, Ont.	10-10-45
McQuade, G. D., Montreal	24-10-45
Nicholson, J. F., Sydney, N.S.	21-11-45
Norris, R. L., Wyoming, Ont.	23-10-45
O'Neill, W. F. H., Winnipeg	1-11-45
Paterson, J. F., Kingston	8-10-45
Patterson, L. A., Queen Charlotte Islands, B.C.	21-9-45
Pennal, G. F., Mimico, Ont.	24-10-45
Petrie, J. G., Montreal	4-10-45
Ratz, R. G., Kitchener, Ont.	29-9-45
Rich, C. B., Edmonton	28-8-45
Richard, H. L., Edmonton	25-10-45
Richardson, A. L., Petitcodiac, N.B.	15-10-45
Richardson, H. J., Englehart, Ont.	18-10-45
Robertson, D. P., Toronto	24-9-45
Robertson, H. R., Montreal	22-9-45
Ryan, P. A., Toronto	10-10-45
Secter, M. B., Buchanan, Sask.	25-10-45
Shier, C. B., Toronto	15-10-45
Sidenberg, R. E., Toronto	17-10-45
Sills, H. L., Windsor	23-10-45
Sloan, W. L., Toronto	10-10-45
Solway, A. J. L., Toronto	20-10-45
Spooner, E. G., Regina	31-10-45
Stevens, B. W., Toronto	30-10-45
Stewart, O. W., Montreal	6-9-45
Strain, F. A., Gore Bay, Ont.	12-10-45
Taylor, H. E. H., Halifax	25-9-45
Thibault, M. A. G., Sherbrooke, Que.	19-10-45
Tilley, J. V., Toronto	17-10-45
Torrance, T. L., Wingham, Ont.	15-10-45
Vining, J. A., Toronto	10-10-45
Walter, A. B., Saint John, N.B.	28-9-45
Watson, C. H., Toronto	15-10-45
Wells, J. P., Orillia, Ont.	26-10-45
Wolstein, E., Ottawa	11-9-45

"Science seems to me to teach in the highest and strongest manner the great truth which is embodied in the Christian conception of entire surrender to the will of God. Sit down before fact as a little child, be prepared to give up every preconceived notion, follow humbly wherever and to whatever abysses nature leads, or you shall learn nothing."—Huxley.

Abstracts from Current Literature

Medicine

The Pathology of Sickle Cell Disease. Murphy, R. C., Jr. and Shapiro, S.: *Ann. Int. Med.*, **23**: 376, 1945.

In sickle cell disease there occur hæmolytic crises of varying severity separated by periods of relative quiescence. Accompanying the crises are fever and disseminated pains produced by multiple infarctions which may be visceral as well as skeletal. Hæmolytic aspects representing resolution of thrombi and disintegration of the sickle cell are prominent.

The pathology of sickle cell disease is determined by the diffuse infarcts, which in turn stem from the abnormal shape and other physical characteristics of the sickled erythrocyte. During the time a susceptible cell retains the normal shape it is indistinguishable in behaviour from normal erythrocytes. The act of sickling, however, renders it elongated and rigid, making capillary passage difficult. As the sickled forms gain prominence in the blood stream they eventually form a mechanical impaction delaying the capillary flow. As a result of the static blood flow thrombosis takes place. This constitutes the fundamental pathological lesion of sickle cell disease.

All erythrocytes of a subject with the asymptomatic sickle cell trait are capable of assuming the abnormal form and differ from those of persons who exhibit the crises only in that they (the former) possess a higher threshold of sickling.

Susceptible red cells exhibit increased tendency to sickling as they mature. Evidence is lacking that sickling affects the longevity of an erythrocyte, hence the abnormal form tends to increase progressively during the quiescent periods until mechanical obstruction and thrombosis of capillaries occur. With each thrombosis there are liberated into the circulation coagulating bodies (thrombin, thromboplastin) which further enhance thrombosis and accelerate the precipitation out of the circulation of sickled red cells. A self perpetuating sickle cell "crisis" is thereby inaugurated which gains momentum until the major part of the sickled cells are destroyed and the blood is again "rejuvenated" by release into the circulation of immature normally shaped cells. The sudden liberation of coagulating bodies into the circulation accounts for thrombosis of larger blood vessels also.

Anticoagulant therapy appears to be inadequate to prevent a crisis. If in effect at the abrupt onset of a crisis anticoagulants might postpone the thrombotic tendency of the blood; they could not, however, prevent the increased tendency of the cells to sickle as they grow older, which tendency leads inevitably to the vascular occlusions. S. R. TOWNSEND

Penicillin in Suppurative Disease of the Lungs due to Streptococcus Hæmolyticus. Kullman, H. J. and Crellin, J. A.: *Ann. Int. Med.*, **23**: 135, 1945.

Two cases of lung abscess resulting in the course of sulfonamide-resistant *S. hæmolyticus* pneumonia were successfully treated with penicillin parenterally. The number of days of penicillin therapy, 14 and 24, and the total dosage of 1,475,000 and 3,020,000 units are indicative of absorption of penicillin through thin-walled cavities when treated over a sufficient period of time.

The sputum in the two cases of lung abscess became negative for hæmolytic streptococcus in three days and two days respectively. Complete healing, demonstrated by roentgenogram, occurred in 26 and 34 days, respectively.

Four cases of streptococcus hæmolyticus empyema were successfully treated by intrapleural injection of penicillin supported by intravenous and intramuscular use of the drug. Two of these cases were classified as sulfonamide-resistant and the other two had insufficient sulfonamide to be classified as such. The latter were moribund. Thoracotomy was obviated in all cases of empyema. No evidence of reinfection or recurrence has occurred in any of the patients.

Aspirated pleural fluid remained sterile after 24 to 36 hours, when the intrapleural treatment was supplemented by intravenous and, later, by intramuscular penicillin. The case receiving only intrapleural penicillin retained an infected pleural space until the sixth day after treatment was started. Success or failure may hinge upon the supplemental parenteral administration of penicillin.

Residual fibrosis and subjective slight dyspnœa necessitated return to a limited duty status in one case and the three others returned to a full duty status in 125, 146 and 151 days, respectively. S. R. TOWNSEND

Rickets in Iceland. Dungal, N.: *Am. J. M. Sc.*, **210**: 70, 1945.

Dungal made a survey of 253 children in Iceland, all between three months and two years of age. Each child was examined clinically and with roentgen rays of wrist and knee. The clinical examination showed definite signs of rickets in 66%. Of these 35% had a visible Harrison's groove, 44% a rachitic rosary, and definite signs of cranial rickets were found in at least 54%. X-ray photographs showed signs of rickets in 75% of the children, the combined methods of examination raising the percentage to 77. The author believes that specific antirachitic therapy is required throughout the long dark winter months, the long summer days not affording sufficient protection no matter how well utilized. Most children receive a daily dose of 400 to 750 international units. The author believes that this is less than half of what is required for complete protection. He believes that the value of ultraviolet irradiation is not sufficiently appreciated by the population at large. E. S. MILLS

The Rehabilitation of Patients Totally Paralyzed below the Waist. I. Anterior Rhizotomy for Spastic Paraplegia. Munro, D.: *New England J. Med.*, **233**: 453, 1945.

Complete transection of the spinal cord results in complete loss of motor and sensory power below the level of the cord segment involved. A spastic paraplegia occurs and along with this marked contractures. Bed and pressure sores and reflex function of bowels and bladder make nursing tedious and the existence of the patient one which welcomes death as a release.

Operative severance of the anterior spinal nerve roots on both sides from the level of thoracic ten down to sacral one converts the spastic paraplegia into a condition of muscular flaccidity. Contractures straighten out and such patients, with the aid of appropriate splints and crutches, can be made ambulant. The bladder can be voluntarily emptied every three hours throughout the day and the patient will remain dry throughout the night. The bowels also can be trained to empty at the same hour every one or two days and these patients become capable of earning a livelihood.

Preoperative preparation and training are of the utmost importance. The operative technique requires experience. These features, as well as the application and results of the operation in ten of nineteen patients, are discussed in detail. NORMAN S. SKINNER

Cobra Venom in the Treatment of Angina Pectoris. Freedberg, A. S. and Riseman, J. E. F.: *New England J. Med.*, **233**: 462, 1945.

More than seventy different remedies have been investigated by the authors and their associates in an angina clinic under carefully controlled conditions, using a standardized exercise test and placebos. The present study deals with the use of cobra venom in twelve patients. In seven these resulted an increased exercise tolerance and clinical improvement. The drug did not prevent the electrocardiographic changes associated with

exertion in patients with angina pectoris and hence its action is not that of coronary vasodilatation.

The recommended dosage is ten mouse units (one c.c.) intramuscularly three times the first day, once daily for seven days, then twice weekly. No untoward reactions were observed with this dosage and although local pain was invariable it was not sufficient to warrant discontinuance of treatment in any case.

NORMAN S. SKINNER

The Absorption, Excretion and Toxicity of Streptomycin in Man. Anderson, D. G. and Jewell, M.: *New England J. Med.*, **233:** 485, 1945.

Streptomycin is an antibacterial substance isolated from the culture filtrate of *Actinomyces griseus* and has a marked antibacterial action *in vitro* against many Gram-negative and Gram-positive bacteria. Several reports have shown it to be sufficiently effective *in vivo* in animals with various Gram-negative bacteria and the tubercle bacillus to warrant its extended trial in human infections. The present preliminary study deals with the absorption and excretion of the drug in man, its use in three clinical cases and the toxic reactions which were observed.

A unit of streptomycin is the quantity required to inhibit the growth of a given strain of *Escherichia coli* in 1 c.c. of nutrient broth or agar and represents a much smaller amount of antibacterial activity than does a unit of penicillin, probably only about one-twelfth.

No evidence of streptomycin can be found in the blood after oral administration although *in vitro* test shows no inactivation on contact with gastric juice. Intravenous and intramuscular administration results in rapid and equal blood concentration, the peak of concentration being slightly delayed with the intramuscular route. Excretion by the urine is slower than in the case of penicillin, theoretically effective blood levels being maintained for a longer period.

After therapeutic trial on three patients no evidence of hæmatopoietic, renal or liver damage was evident. Intravenous injection frequently causes a flushing and headache which was not sufficient to interfere with the administration of therapeutic doses. Intramuscular injection results in a moderate amount of pain and the continued use of this method results in induration which may last several days. Repeated intrathecal injection caused no apparent untoward effect.

Three cases of infection caused by Gram-negative bacilli (*Eberthella typhosus*, group B. Salmonella and *Hæmophilus influenzæ*) were treated clinically without definitely conclusive results. NORMAN S. SKINNER

Surgery

Fibrin Foam as a Hæmostatic Agent in Suprapubic Prostatectomy. Quinby, W. C. and Landsteiner, E. K.: *New England J. Med.*, **233:** 267, 1945.

Many diverse methods have been employed to achieve hæmostasis after removal of the prostate and although several, such as the use of catheters and dilatable bags, are of considerable value none are perfect and all are a source of discomfort to the patient.

The authors employed "fibrin foam" in 12 cases of suprapubic prostatectomy in the form of conveniently sized pieces which had previously been soaked in a solution of thrombin. After removal of the prostate the fibrin foam was held in place on the bleeding surface by a pledget of gauze over which negative pressure was made by suction through a tube. Four to six minutes of such pressure was sufficient to produce clotting and adhesion of the foam. As soon as the prostate bed was satisfactorily dry, usually after ten to twenty minutes, the bladder was closed and a small sized mushroom catheter left in the upper angle of the wound. The head of the catheter should be so adjusted within the bladder as to be as far as possible away from the area of operation.

In all cases control of the bleeding was entirely adequate and much better than usually achieved from the use of a bag. In no case did secondary hæmorrhage occur. The coagulated foam is apparently not soluble in urine but after three to four days it becomes disintegrated into a crumbling granular form which passes out easily with the urine. NORMAN S. SKINNER

Plastic Surgery and Burns

Direct Flap Repair of Defects of the Arm and Hand. Brown, J. B. *et al.*: *Ann. Surg.*, **122:** 706, 1945.

Any type of wound may leave surface defects and extensive crippling scars of the arm and hand. These can be repaired with direct abdominal and chest flaps. There is rarely need for delaying these flaps. Their use allows a valuable saving of patient-hospital-weeks. Such flaps make possible the earlier repair of underlying lesions of bone, nerve, or tendon. Such repair involves resection of surface and deep scar and the designing of a surface closure through the use of local flaps, skin grafts, or direct or delayed pedicle flaps. Direct flaps may be used within the first few days of the original injury.

Diagnosis and recording of arm and hand injuries is important. Sensation in fingers is of the utmost importance. A system of numbering the fingers and lettering the metacarpals, phalanges and joints is used by the authors.

The flap for a hand is usually raised in the lower abdominal quadrant on the same side. Pliofilm or celluloid is used as pattern material. The defect left by elevating the flap may be closed by graft or not: grafting means easier convalescence and care. Fixation is obtained with large strips of adhesive. Pressure dressings are important, preventing venous stagnation. Flaps should be inspected one hour after operation, and again the same evening. Adequate dressing service is essential. Splinting may be necessary to prevent recurrence of deformity.

Free skin grafts are preferable on the hands and palm. Free full thickness cervical grafts are valuable on the dorsum of fingers. Cross arm flaps are used to obtain thin skin for finger or thumb web. Occasionally, double pedicled, pocket, and tubed flaps are used.

Flaps may be detached in 14 to 20 days. Partial detaching is done when indicated. Thinning is often necessary at a later date. STUART D. GORDON

Treatment of Burns: A Plea for Simplicity. Flemming, C. W.: *Brit. M. J.*, **314:** September 8, 1945.

The first step in trying to clear the confusion existing in our attitude toward the treatment of burns is to consider the circumstances surrounding the injury. No one form of treatment is applicable to all cases. It is empirical to some extent because the pathological processes which cause illness and death are not fully understood.

Burns should be classified as slight, or severe. In the former, local dressings should be adapted to the state of the burn, with "Glasgow cream" the most widely applicable. In the second group the burned areas are cleaned and debridement done under aseptic precautions, with morphine the only sedative and no anæsthetic. Dressings as in the first group to be left untouched for 3 to 7 days. This may be assisted by a saline bath and any bath may be sterilized and improvised for the purpose. Hæmoglobin estimation is as important as temperature and pulse records and its values should be adjusted by intravenous plasma in the early stages, and later, by transfusion.

Food with extra protein is important. As soon as possible the deeply burned areas should be healed by skin grafting of some type. The terms shock and toxæmia are better not used in our present knowledge of their values, and the patient treated symptomatically as a surgical problem.

Obstetrics and Gynæcology

A Case of Arrhenoblastoma Complicating Pregnancy. Brentnall, C. P.: *J. Obst. & Gyn. Brit. Emp.*, **52:** 235, 1945.

Ovarian tumours associated with virilism are not of a single histological type and the term arrhenoblastoma has been criticized by a number of writers since it is used to suggest a functional activity of the growth and does not describe its morphology or histogenesis. For these reasons Burrows prefers the word "arrhenoma", which is not open to this objection. The majority of such tumours of the ovary fall into one or other of the following histological groups. (*a*) Growths showing structures frankly resembling testicular tubules (adenoma tubulare testiculare ovarii) Pick's; (*b*) those showing epithelial cords without lumina, which are believed to represent the solid cords of the developing rete testis; (*c*) those consisting largely of cellular fibromatous tissue which is sometimes so cellular as to be described as sarcomatous; (*d*) teratomatous growths which may show in certain areas the development of male gonadic tissue.

Interstitial testicular (Leydig) cells are often found in the less differentiated forms, but have not been constantly reported in the tubular type of tumour. In addition, adrenal cortical tumours in the ovary may occur and produce virilism. P. J. KEARNS

Social and Economic Factors and Infant Mortality. Baird, D.: *J. Obst. & Gyn. Brit. Emp.*, **52:** 217, 1945.

In order to compare stillbirth- and neonatal mortality-rates in different social classes, the records of 3 groups of Aberdeen cases have been analyzed: Group 1, a series of 1,419 delivered in a nursing home, belonging to the Registrar-General's social classes I and II and mostly under the care of the family doctor; Group 2, a series of 8,808 booked hospital cases, under the care of specialists, belonging to social classes III, IV, and V; Group 3, 501 cases in private specialist practice. In the 3 groups the stillbirth-rates were 25.3, 30.4 and 10.0 respectively, and the neonatal mortality 13.0, 34.5, and 8.1. In Groups 1 and 2 the stillbirth rates in full-time and premature infants were the same, and in each group the stillbirth-rate in premature infants was 10 times that in full-time infants. The excess mortality of Group 2 over Group 1 was due to the incidence of prematurity in Group 2 being almost double that in Group 1. The patients in Groups 1 and 3 are in the same social class, and the differences in the stillbirth- and neonatal mortality-rates are probably due to different standards of obstetric care. In Group 1 the stillbirth-rate has fallen from 47.6 in the years 1933 to 1937, to 14.9 in the year 1944. This fall is due mainly to improved obstetrics. In Group 2 the stillbirth-rate is 3 times that in Group 3, although the standard of obstetrics is the same. There is very little scope for reduction in the stillbirth-rate in Group 2, except by measures designed to improve the health and nutrition of the mother.

The problem of the high neonatal mortality in Group 2 is largely one of the prevention of prematurity. Seventy per cent of the deaths in premature infants occurred within 48 hours of birth, most of them being too feeble to maintain a separate existence. The stillbirth-rate is relatively high with first pregnancies, least in the 2nd and thereafter rises with each pregnancy. The rate rises with age in each parity. In Group 2 the stillbirth-rate in the age group 25 to 34 in primiparæ is nearly 5 times that in the same age group of primiparæ in Group 1. P. J. KEARNS

Bilateral Polycystic Ovaries. Stein, I. F.: *Am. J. Obst. & Gyn.*, **50:** 385, 1945.

In the past fifteen years 53 patients with bilateral polycystic ovaries were studied. These patients sought advice chiefly because of amenorrhœa, sterility or hirsutism. The diagnosis of bilateral polycystic ovaries was usually based upon a typical clinical syndrome and was substantiated by demonstrating the ovarian lesions with gynæcography (pneumoperitoneum). Hormone and other medical therapy proved valueless in the treatment of this condition. Surgical treatment in the form of bilateral ovarian wedge resection and suture of the ovaries has proved to be a satisfactory and most successful method of treatment.

Fifty-three patients were treated surgically. Seventeen married patients and three of the single patients who subsequently married (a total of 20) became pregnant after operation (64.5%), resulting in 26 pregnancies and 28 babies. This number was obtained as four women were pregnant twice, one three times, and there were two sets of twins. After presentation of the paper, but before publication, four additional pregnancies were reported, making 24 patients pregnant, or 72.7%. Periodic check-up postoperatively revealed that there were no recurrences of bilateral polycystic ovaries. Three single women who had painful and febrile postoperative courses developed a unilateral ovarian cyst with adhesions (5%).

On the basis of his study the author recommends that bilateral polycystic ovaries associated with amenorrhœa, sterility or hirsutism be treated by bilateral ovarian wedge resection. ROSS MITCHELL

Pædiatrics

The Danger of Intramuscular Injection of Calcium Gluconate in Infancy. Lamm, S. S.: *J. Am. M. Ass.*, **129:** 5, 1945.

The danger, in infants, of injecting calcium gluconate intramuscularly has been noted by previous observers. Calcium deposition and sloughing occurred in one case reported, infection in others.

The author describes three cases in which abscesses followed injection. Two recovered. In the third, a sloughing gangrene developed, and then pneumonia and meningitis. Death resulted from sepsis, not due to the drug, and an autopsy was done. "The anatomic diagnoses were abscess of buttocks, sepsis, atelectasis of both lungs, bilateral hæmorrhagic pneumonia and acute purulent basilar meningitis." Oral and intravenous routes are available for administration, but "It would appear advisable to avoid completely the use of calcium gluconate intramuscularly in infants. . . ."

R. CAMERON STEWART

Boric Acid: A Dangerous Drug of Little Value. Watson, E. H.: *J. Am. M. Ass.*, **129:** 5, 1945.

Cases of poisoning following the therapeutic use of boric acid in powder, ointment, and solution have been reported. Fatal accidents have occurred from administering boric solution to infants by mistake. Instances are given. Statements regarding the toxicity of the drug when employed in large amounts are quoted from textbooks. Its limited value for the purposes for which it is used is noted.

The author reports in detail a case of boric acid poisoning in a boy of 4½ months. The patient was suffering from severe extensive infantile eczema. Treatment included the use of wet dressings of saturated boric acid solution and later of boric ointment. Symptoms of poisoning developed—fever, convulsions, blindness, deafness, coma, and an intense erythema, "so pronounced that the child was literally the colour of a boiled lobster". This significant feature appeared early, and is noted in previous reports. The spinal fluid showed albumin and increased pressure. Two days before death the cell count was 185. The baby lived for about three weeks after the onset of toxic signs. The cause of death was a terminal lobular pneumonia and purulent pneumococcic meningitis. Other autopsy findings were generalized septicopyæmia, fatty atrophy of the liver, cloudy swelling of kidneys, exfoliative dermatitis of face and neck.

The signs and course of the illness resembled those described in boric acid poisoning. Enough of the material was apparently absorbed from the extensive areas

of broken skin due to the eczema to cause an acidosis and damage to the central nervous system. The author holds that "Use of boric acid preparations should be discouraged because of their limited usefulness and the real dangers of their accidental and intentional use."

R. CAMERON STEWART

Oto-Rhino-Laryngology

The Significance of Hoarseness. Zinn, W. F.: *Ann. Oto-laryngol.*, **54:** 136, 1945.

As defined by Frank, hoarseness is "any alteration in speaking voice which results in a roughened or rasping character to the voice". This alteration may be produced by impairment to the speech mechanism (voice box). The cavities of the mouth, nose, pharynx and lungs contribute to speech production. Hoarseness may result from the following conditions: (1) Inflammatory infections of the larynx—the more common being acute and chronic laryngitis, tuberculosis, lues, diphtheria, influenza, measles and scarlet fever. (2) Trauma—including all types of wounds to the larynx, internal and external. (3) Tumours—benign and malignant. (4) Disturbances of the central and peripheral nervous systems, including aneurysms, brain tumours, and any condition producing pressure or injury to the recurrent laryngeal or vagus nerves, and hysterical aphonia.

The author reminds us that hoarseness is a preoperative symptom (2 to 6 months) for 80% of cases of carcinoma of the larynx; that 80% of all cases of laryngeal carcinoma are curable by operation if the diagnosis is made while the disease is still intrinsic. The fact must not be overlooked that three diseases most responsible for hoarseness, cancer, tuberculosis and lues, can all be present at the same time in the larynx. Laryngeal tuberculosis and syphilis are rarely primary.

The author concludes by urging the persistent and untiring support of a program of education for the medical student, the general practitioner and the public on the prime importance of hoarseness as a warning of coming danger.

V. LATRAVERSE

Penicillin in Iodized Oil for Instillation into the Lungs. Romansky, M. J., Dugan, D. J. and Rittman, G. E.: *Science*, **102:** 255, 1945.

The addition of an antibacterial agent to iodized oil might produce a valuable therapeutic aid in bronchiectasis and nasal sinus infections.

A suspension of calcium penicillin in 40% iodized oil produces a stable mixture which has been instilled into the lung in 12 patients without adverse effect and has maintained penicillin in the lung for a minimum of 24 hours after a single instillation. In 10 cases, no significant changes were noted after a single bronchial instillation; one with bronchiectasis and the other with lung abscess had gradual reduction in sputum by the 7th day.

Preparation.—Calcium penicillin is placed in a sterile mechanical blender and a sufficient quantity of sterile 40% iodized oil is added. The mixture is blended for approximately 10 to 15 minutes. Each c.c. of the final suspension contains 1,500 Oxford units of penicillin. The penicillin iodized oil has maintained its potency for 60 days at ice box, room, or 37° C. temperatures.

V. LATRAVERSE

The Influence of Pregnancy on Otosclerosis. Barton, R. T.: *New England J. Med.*, **233:** 433, 1945.

In otosclerosis new spongy bone is laid down around the stapes and oval window, resulting in progressive deafness. The cause is unknown although the process is frequently accelerated by pregnancy and other endocrine crises.

In an effort to evaluate the influence of pregnancy, and to discover if indications might exist to warrant therapeutic abortion in certain of these patients, a study was made of 133 otosclerotic women who had experienced one or more pregnancies. Of this series 72% suffered hearing loss with the first pregnancy and 50% with subsequent ones. It was found to be impossible to predict the effect of either pregnancy or abortion on the individual case. Sterilization, or other eugenic measures, are futile in the control of otosclerosis because the hereditary nature of the disease is not known accurately and it is impossible to predict deafness of progeny.

NORMAN S. SKINNER

Pathology

The Functional Pathology of Frostbite and the Prevention of Gangrene in Experimental Animals and Humans. Lange, K., Boyd, J. L. and Loewe, L.: *Science*, **102:** 151, 1945.

By the use of fluorescin injected in small amounts and observing under ultra-violet light its migration with the blood stream and into interstitial spaces new information has been obtained on the pathological physiology of the frostbite lesion. Areas of the abdominal skin of rabbits were frozen solid for periods varying from 5 to 25 minutes, by the use of dry ice. For periods of 30 to 120 minutes following no fluorescence appeared in the areas, indicating severe spasm of the arterioles. After this all blood vessels reopened and the fluorescin reappeared, while its diffusion into the surrounding tissues was many times greater than in the non-exposed skin. The exposed areas also became greatly swollen; 8 to 14 hours later a repeat fluorescin injection showed no fluorescence in the exposed areas, indicating a pre-gangrenous state. The non-fluorescent areas extended until the entire region became gangrenous during the next few hours.

Biopsies at this stage showed clumping of the red cells in the smaller vessels where they formed a sludge, due probably to loss of plasma through the highly permeable vessel wall. They could however be flushed out with saline readily as individual cells, and organization into thrombi did not appear until 72 hours later, the thrombosis leading to gangrene. As a corollary it appeared that prophylaxis against gangrene must be initiated before thrombosis occurs. Rabbits frozen as described were heparinized within 4 hours after exposure. None developed gangrene, while control animals exposed for more than 15 minutes developed gangrene.

In a group of human volunteer subjects undergoing treatment with penicillin and heparin for subacute bacterial endocarditis comparable results were obtained, the clotting time in the treated cases staying between 25 and 60 minutes.

In the case of a man brought into hospital with extremities frozen by lying in the street for 14 hours exposed to a temperature of 18 to 20° F. intravenous heparin was administered for 5 days, clotting time maintained between 30 and 60 minutes and blistering of the hands with no permanent tissue loss was the only injury.

D. E. H. CLEVELAND

The Relationship of Hypersensitiveness to Poison Ivy and to Cashew Nut Shell Liquid. Keil, H., Wasserman, D. and Dawson, C. R.: *Science*, **102:** 279, 1945.

Patch test studies have shown a biological relation between hypersensitiveness to "poisonous" members of the Anacardiaceæ family and a variety of phenolic compounds, synthetic and non-synthetic. The best known members of the Anacardiaceæ in this country are poison ivy and its congeners. An important member of this family in the Far East is the cashew nut, the shell liquid of this plant having important commercial uses. It appears in the manufacture of certain plastics and resins used in brake-linings, and insulating materials, especially of the ignition systems of airplane engines. It has been found that persons sensitive to poison ivy are sensitive also to cardol, one of the active ingredients of cashew nut shell liquid. They are also sensitive in the majority of instances, to the raw oil and to two other of its active

ingredients, anacardic acid and anacardol, and also to another substance, isolated from the oil commercially, known as "cardanol". Differing degrees of sensitivity are shown to be directly related to the chemical structure of the different substances, which are alkenyl or alkyl derivatives of catechol, resorcinol and phenol, in which the degree of skin reactivity is determined by the length and position in relation to the phenolic hydroxyl group of their normal unsaturated side-chains. This is significant because a number of resorcinol and catechol compounds, such as hexyl resorcinol and adrenalin having side-chains in other positions or of greater length do not show these group reactions. D. E. H. CLEVELAND

Experimental Endocarditis in Rats. Clawson, B. J.: *Arch. Path.*, **40:** 153, 1945.

In an attempt to explain the relationships between human rheumatic endocarditis and bacterial endocarditis, white rats were repeatedly injected intracardially with suspensions of *S. viridans* or *S. hæmolyticus*. In control experiments, injections of the bacteria were made intraperitoneally and subcutaneously. Streptococcal antigen, Dick toxin, rabbit serum and horse serum were also given by intracardiac injection in other rats. Lesions were found only in those animals that had received intracardiac (blood stream) suspensions of bacteria. These closely simulated the valvular lesions of acute rheumatic endocarditis. In some rats bacterial vegetations developed on valves with or without rheumatic-like vegetations. A greater percentage of valve lesions was obtained when the agglutinin titre was high. The author concludes that the experiments support the theory that acute rheumatic endocarditis and bacterial endocarditis are etiologically similar, but differ in their degree of manifestation. He also concludes that both occur as a response to a direct valvular infection with bacterial cells. G. C. MCMILLAN

Industrial Medicine

Medical Services in Industry in Great Britain. Hyde, R. R.: *International Labour Review*, p. 433, April, 1945.

It is recognized that as an important social group, the factory cannot be left out of a national health scheme. The author of this article stresses the fact that an equally important place in the scheme must be found for industrial medical services. In tracing their development in Great Britain he considers the appointment in 1915 of the Health of Munition Workers Committee, as the turning point. The rapid progress of today is in striking contrast to the slow growth before the first World War. The appointment of factory inspectors in 1833 was evidence at that time that interest was awakening. A certain amount of voluntary activity was taken by individual firms during the latter part of the century, but in 1914 the existing health services in industry were completely inadequate to cope with the situation.

The Health of Munition Workers Committee stressed the importance of obtaining exact and scientific data and recommended that industrial life be guided by (1) the application of physiological science to the details of management and (2) a proper and practical regard for the health and well-being of the workpeople, in the form of humanizing industry and improving the environment. The next quarter century furthered slow development. Voluntary action by enlightened employers together with activity of the Factory Department of the Home Office effected considerable progress so that when the second war started, the Government was in a position to take the lead in promoting medical services in industry and industry as a whole was prepared to accept the regulations, suggestions and advice.

Following the commencement of the second World War there were tremendous strides in the development of industrial health services, both within industry and on a national scale. Towards the end of the war the government had recognized the influence of factory medical services in maintaining effective manpower and in increasing output. The need for industrial physicians had been demonstrated to industry.

The author discusses present day industrial medical practices in the treatment of sickness and injuries, in the control of specific hazards and in the control of fatigue. The importance of paying greater attention to the individual worker is recognized, as evidenced by the arrangements being made for the re-instatement of ex-service men, the provision of facilities for the treatment and training of the disabled worker and the development of scientific methods of selection and placement.

Mention is made of difficulties experienced by small firms, in establishing well equipped medical departments, and the desire for group activity which has arisen. MARGARET H. WILTON

Epidemiological Observations on the Use of Glycol Vapours for Air Sterilization. Bigg, E., Jennings, B. H. and Olson, F. C. W.: *Am. J. Pub. Health*, **35:** 788, 1945.

Laboratory and practical studies have clearly established the bactericidal and viricidal effect of glycol vapours on air-suspended micro-organisms. In this article is described an experiment conducted to determine if the incidence of air-borne infections can be reduced by treating living quarters with triethylene glycol (TEG) vapour in effective concentrations. The study was carried out in the sleeping quarters of a military camp. It was recognized that there were sources of cross infections other than sleeping quarters, such as mess halls, classrooms, drill halls, etc., but it was felt that the dormitories were the best environment in which to obtain significant results.

Studies were made on three groups of 640 men, observed for 6 week intervals and equally divided into test and controls, the former sleeping in glycol-treated quarters and the latter in untreated dormitories. In compiling the statistics the following diseases, considered to be air-borne, were used: catarrhal fever, common cold, measles, German measles, mumps, scarlet fever, rheumatic fever, acute tonsillitis, otitis media, chicken pox, acute sinusitis and pneumonia. Details are given *re* the materials used, the operation of the equipment, the method of determining glycol content and bacterial content of the air, and the incidence of infection. During the period of the test, glycol concentrations of 0.0025 to 0.004 mgm. per litre of air and optimum relative humidities were maintained.

The following observations were made: There was a reduction in the total bacterial air contamination. Hæmolytic streptococci were practically eliminated from the air of glycol treated dormitories. There was a definite reduction in air-borne infections. Control of a small epidemic of mumps was attained. Prevention of spread of hæmolytic streptococci from the throat of one individual to another was demonstrated.

MARGARET H. WILTON

Hygiene and Public Health

Treatment of Granuloma Inguinale with Diramin: A New Antimonial. Greenblatt, R. B., Deibert, A. V., Fisher, S. and Clough, W. J.: *J. Ven. Dis. Information*, Washington, **26:** 238, 1945.

Treatment of 29 patients indicated that diramin, a new antimonial, when administered intravenously was a good, safe preparation for the treatment of granuloma inguinale, although possibly not so effective as fuadin.

Fourteen patients were treated with diramin administered intravenously in 2 c.c. quantities 2 to 5 times weekly; patients to whom a few intramuscular injections were administered complained of much pain. In each of the 14 patients, changes ranging from slight improvement to complete healing were observed.

Results of administering to 15 other patients a course of fuadin either before or after a course of diramin therapy indicated that the diramin, administered in 2 c.c. amounts, was not as effective as the fuadin, administered in 5 c.c. amounts. Penicillin administered to several patients for total dosages of 1 to 2 million units over 10 to 20 day periods was without benefit.

The Treatment of Gonorrhœa with Penicillin during the Incubation Period or Early Phase of Syphilis. A Review. Walker, A. E. and Barton, L. L.: *J. Ven. Dis. Information*, Washington, **26:** 241, 1945.

The authors review 7 of the many cases which have been reported and present one additional case, in which penicillin therapy for gonorrhœa prevented detection of syphilis during and immediately following treatment.

The study illustrates a danger to both the indivdual and the public health since the relatively small doses of penicillin which cure gonorrhœa may, in the case of concomitant early syphilis, suppress primary and secondary manifestations but will not prevent recurrences.

As indicated by the 8 cases studied, all patients receiving penicillin therapy for gonorrhœa should be observed periodically for at least 12 weeks after treatment in order to determine whether or not syphilis is present. The physical examination for gonorrhœa should be thorough, for should an unsuspected or concealed chancre or genital lesion be uncovered after penicillin therapy is started, the darkfield examination would in all probability be negatiye. Even when physical examinations are negative, it may still be possible if the patients are kept under close observation during treatment, to discover a number of such cases. Any patient showing an unusual reaction to penicillin, or having a Herxheimer-like reaction, should be examined at frequent intervals for the possible presence of syphilis.

The authors suggest that when there is evidence or suspicion of coexisting syphilis, penicillin therapy should be withheld until a definite diagnosis of syphilis is established or excluded. When this is done, treatment may be started earlier, and the ultimate chances for recovery from syphilis are increased.

Obituaries

Dr. Elizabeth (Findlay) Anderson, wife of Rev. J. Norris Anderson, died at Saint John, N.B., in October, 1945.

Mrs. Anderson was born in Ontario and received her education in Winnipeg. At one time she was a nurse on the staff of the Winnipeg General Hospital, and later received her degree as doctor of medicine from the University of Manitoba. She was for several years a missionary on the teaching staff of the Women's Medical College, Vellore, India.

Since returning to Canada about 20 years ago, she had lived in Winnipeg, Brandon, Halifax and Saint John.

Besides her husband, Rev. J. N. Anderson, she is survived by two sons, two sisters, and four brothers.

Dr. Malcolm Beaton, radiologist at the Sherbrooke Hospital for the past two years, and secretary-treasurer of the Hospital Medical Board, passed away at the Montreal General Hospital on November 2 in his 56th year, after a brief illness.

A graduate of McGill, Dr. Beaton was a general practitioner in Sawyerville before he came to the Sherbrooke Hospital on October 1, 1943. He had been sick for the past two months.

Born in Nova Scotia, son of Rev. and Mrs. R. Beaton, deceased served with a medical unit Overseas in the last war. He practised in Red Bank, N.B., and was in Montreal for a time before proceeding to Sawyerville, where he practised for about fifteen years.

He is survived by his widow, a daughter, his parents, a sister, and two brothers.

Dr. James Tweedie Campbell, a native of Whitby, Ont., passed away in Chicago on October 26, in his 80th year.

The son of the late James Campbell, the deceased was born at Whitby on November 9, 1865. He received his early education at the Whitby Grammar School and the Whitby Collegiate Institute and later graduated in medicine at the University of Toronto.

Dr. Campbell went to Bellevue Hospital, New York City, for postgraduate work and then to London, England, where he took his degree at the Royal College of Physicians and Surgeons. He then continued his postgraduate studies at Vienna and Berlin.

His interest in Canada was continued despite his residence in the United States as he operated the family farm until it was taken over by Defence Industries Limited for the Ajax plant. During his residence in Chicago he made frequent trips to Whitby until the conversion of the farm.

Dr. Wesley H. Coffyn died at his home in Bathurst, November 27, 1945. He was born in St. Peters, P.E.I., in 1878. His primary education was gained in P.E.I. at Prince of Wales College followed by courses in Arts and Medicine at Dalhousie University after which he specialized in eye, ear, nose and throat at Knapp Memorial Hospital and the Manhattan Eye and Ear Hospital, New York. His original practice was at Pokiok, York County, but from 1911 till his death he practised in Bathurst where he acted as mayor and represented the district in the local legislature at Fredericton. For many years Dr. Coffyn maintained a private hospital at Bathurst which was later taken over as a public hospital. He was a member of the Masonic Order and a long time active member of the New Brunswick and Canadian Medical Associations. Dr. Coffyn was an outstanding citizen of the North Shore of New Brunswick and was held in high esteem by professional and lay friends throughout the province.

Dr. N. Doucette died at his home in Dalhousie, N.B., on October 24, 1945. Dr. Doucette was 72 years of age. He was born at Miskinge, Quebec, graduated in Medicine from Laval University and began practice in Dalhousie in 1900. He retired from practice in 1939 due to ill health. He was a member of the Assomption Society and the Knights of Columbus and is survived by his widow and six children.

Dr. John Gaskin Dunlop, a graduate in medicine from Queen's University in 1932, died at his residence, 168 South Kingsley Drive, Los Angeles, on October 15.

Born in Kanazawa, Kaga, Japan, on September 25, 1903, he was the son of the late Dr. J. G. Dunlop, Sr., and his wife, Emily Ely, of Kingston. He was educated in Shanghai American School, Mt. Hermon School for boys in Massachusetts and studied and worked with the Mayo Institute, Rochester, Min.

He is survived by his widow, and two children.

Dr. Robert E. Gaby died suddenly at his home in Toronto on November 14, 1945. Some six months ago Dr. Gaby was stricken with coronary thrombosis and made a good recovery. A second attack ended his life at the age of sixty-four years.

Dr. Gaby was born in Elmira, Ontario, the son of Joseph and Jane Gaby. He graduated with honours in Natural Science from the University of Toronto in 1903 and in Medicine from Cornell in 1907. He was an intern in Toronto General Hospital and served as demonstrator in the departments of Anatomy and Physiology in the University of Toronto for several years before being appointed to the staff in Clinical

Surgery in 1911. He rose through the grades in this department from junior demonstrator to Associate in Surgery and was active on the staff in Surgery of Toronto General Hospital until his death.

Dr. Gaby was a Fellow of the American College of Surgeons, of the Royal College of Surgeons of Canada and the Academy of Medicine, Toronto. He was elected Chairman of the Section of Surgery for the session 1928-29. He was also a member of the Canadian Association of Clinical Surgeons and the Æsculapian Club. He was a gifted linguist and made use of this talent in the hospital wards with patients, particularly those of Italian origin, who could not make themselves understood in English.

In World War I Dr. Gaby served with No. 4 Canadian General Hospital in England and the Near East. He rose to the rank of Major in the R.C.A.M.C.

For twenty-six years he was consulting surgeon to the Ontario Hydro Electric Commission. In this position he gained an experience that made him an authority on electric burns and other damage to the human body by electrical currents. He contributed valuable papers on these subjects to the Academy.

Dr. Gaby was held in high regard by his colleagues and by his students and his loss is sincerely mourned. He is survived by his widow and son.

Dr. John Muirhead Leney, aged 68, died suddenly on October 26. Born in Montreal, Dr. Leney graduated from McGill University in 1902 and came to Winnipeg the following year where he entered partnership with Dr. W. A. Gardner.

In 1905, Dr. Leney became medical officer of the Grand Trunk Pacific, later part of the Canadian National Railways, and remained with the railway as regional medical officer, Western region, until his retirement in 1934. For two years, until a few months ago, Dr. Leney was on the medical staff of the Deer Lodge Hospital.

Dr. Leney was a member of the Manitoba Club and the St. Charles Country Club.

He is survived by his widow, Mrs. Julia Leney; one daughter, and a sister.

Dr. Dougald Joseph MacMaster died at Antigonish November 13, 1945. He was 75 years of age. Born at Glen Road, Antigonish County, September 27, 1870, he began his career as a school teacher. He graduated from St. Francis Xavier in 1893 and later entered Georgetown University, Washington, D.C., to study medicine. He later transferred to the College of Physicians and Surgeons, Baltimore, where he graduated in 1904.

His first practice was in Inverness, N.S., the year of his graduation. In 1922 he moved to Antigonish. For many years he was physician to St. Francis Xavier University and was extremely popular with the student body. A prominent member of the staff of St. Martha's Hospital, his services to that institution will be particularly missed.

Dr. Samuel Moore, aged 81, died on November 3 at Hamilton.

Dr. Moore was born in Simcoe County and received his early education at Collingwood High School. He taught school for several years. Graduating from Trinity Medical College in 1897, he practised for 10 years at Horning's Mills, moving to Toronto in 1907.

Dr. Moore was a member of the Downtown Kiwanis Club, Alpha Lodge, A.F. and A.M. and Ward 6 Progressive Conservative Association. Formerly an elder in Bonar Presbyterian Church, he was alter an elder in Alhambra United and Trinity churches. His wife predeceased him in 1940.

Surviving are a son and a daughter.

Capt. George P. Nash, aged 37, R.A.M.C., formerly of Kingston, who had served in the second World War for the last five years, died on November 23 in the British Army Hospital, Brussels, Belgium.

While en route to England from Italy with his unit Capt. Nash contracted diphtheria and was removed from the transport at Dieppe and taken to Brussels for medical treatment. Capt. Nash enlisted in 1940 and had seen active service at the invasion of West Africa and in Sicily and Italy.

Born in Kingston, he attended local schools and graduated from Queen's University in medicine in 1932. He interned in Windsor, Ont., and took postgraduate study in Edinburgh, Scotland, and in Liverpool, Eng. After three years' medical practice in Kitchener he returned to England in 1938 and established a practice in Oxford.

He leaves a widow and two children, Charles and Peter.

Dr. T. S. Philp died very suddenly at Belleville on November 23.

Dr. Philp was completing his 58th year in practice, and had been active to the end.

He was in his 88th year. Following graduation from the University of Toronto, he practised at Consecon village, Prince Edward County, for seven years. He then went to England for postgraduate study. On his return to Canada in 1895, he located at Picton and had since practised here.

In 1937, on the occasion of his golden anniversary as medical practitioner, he was honoured by medical men of the district and presented with a gold-headed cane. In January, 1943, he completed 50 years as a member of the British Medical Association and was made an honorary life member of the Association.

Dr. Philp did not seek public office to any extent but was a power for good on behalf of the town. He was prominent for years in Hydro circles and was one of those who re-organized the present Picton Public Utilities on a sound basis. He was active in politics, being a staunch Conservative. He was a Past Master of Consecon Masonic Lodge and a member of Picton United Church.

In earlier days, Dr. Philp was an outstanding curler and golfer. He was keenly interested in yachting and fishing. He travelled widely. He helped plan the present Prince Edward County Hospital and has since been one of its most generous supporters.

When the Picton Gazette Publishing Company was organized, Dr. Philp was one of the shareholders for some years.

Recently, he had donated property near his home to the town park, to be used as part of a proposed community centre.

He is survived by his widow.

Dr. George Albert Sihler, Sr., aged 84 years, oldest physician and surgeon in Litchfield, Illinois, died on October 24. He was born in Simcoe, Ont., May 28, 1862.

As a young man he attended the public school of Simcoe and in 1883 he graduated in medicine from McGill University. He spent a year of study in Germany and in 1884 came to Litchfield to enter the practice of his profession.

At the time of his death he was the oldest member of the Montgomery County Medical Society which had honoured him in 1938 with the presentation of the 50 year club membership in the Illinois State Medical Society.

Dr. Sihler played an important part in the development of the business, social and professional life of the city of Litchfield. He was a member of the grade school board for 20 years and was one of the group of residents of the city who helped establish its water system.

He established the Sihler Clinic, one of the most widely known medical centres on Central Illinois, when

his son, George Jr., came to Litchfield following his graduation at McGill in 1911.

Dr. Noble Garfield Trimble, known both as physician and sportsman, died on November 21 in St. Anthony's Hospital, The Pas, Man. While operating at the hospital he developed coronary thrombosis and died shortly after, at the age of 54.

Born in Carleton County, Ontario, he came to Winnipeg in 1903. Graduating in medicine in 1941 he practised at Wawanesa, Dauphin and The Pas. There he had as partners Dr. M. K. Brandt and his son, Dr. John Trimble, a recent graduate of Edinburgh, Scotland. As a sportsman Dr. Trimble played football, was an enthusiastic hunter and curler. From 1910 to 1940 he missed only one bonspiel in Winnipeg. He was first vice-president of the Manitoba Curling Association in 1925-26, and an honorary member of that body and The Pas Curling Club.

He is survived by his widow and his son. Big in heart as in stature, he had many friends and his passing is deeply regretted.

Dr. Frederick W. Weston, aged 63, died recently in Tustin, Cal., where he had resided for the last 18 years.

Dr. Weston was born in Toronto. He graduated in arts from McMaster University and in medicine from the University of Toronto. He had been a member of Walmer Road Baptist Church and later Yorkminster Baptist Church.

Surviving are his widow, a son, and four sisters.

Dr. H. Ashley Wheaton died at his home in Sussex on November 23, 1945, after a long illness. Dr. Wheaton was born in Wheaton Settlement, Westmorland County 68 years ago. He was a graduate of McGill in electrical engineering and later in medicine in 1919. As an engineer he spent five years in Havana and since 1919 he practised medicine in Sussex. He is survived by his widow.

Dr. David de Jersey White, died on November 10 in his 77th year at the Ross Memorial Pavilion of the Royal Victoria Hospital.

Widely known in Montreal as a general practitioner, Dr. White was born in Quebec City but moved to Montreal as a boy and received his education at the Montreal High School. He graduated later on from the School of Medicine at McGill University after which he took postgraduate courses at the University of Edinburgh, receiving his L.R.C.P. and S. there.

Dr. White then practised in England for a few years before returning to Canada. He had practised in Montreal for almost 50 years.

He is survived by his widow, one son, and a daughter.

Dr. Edward W. Archibald

The death of Dr. Edward W. Archibald, Montreal, is announced on the eve of our going to press. Full notice of his life will appear in our next number.

When bringing up a child, think of his old age.—Joubert.

News Items

Alberta

The citizens of Calgary were asked by a plebiscite, if they were willing to have a new General Hospital of 600 beds erected at a cost of $3,000,000, and responded with a large favourable majority.

The present General Hospital in Calgary has for some years had a part-time medical superintendent, but is advertising for a full-time physician as the Medical Health Officer has not sufficient time for both positions.

The medical men returning from the Forces are not eager to take mine contracts, which are subject to 60 days' notice for cancellation, as they now want something of a permanent nature. Thus mine contracts go a-begging.

Lieut.-Col. A. E. Kennedy, of Stettler, has resigned as member of the Council of the College of Physicians and Surgeons of Alberta, on account of ill health, much to the regret of the members of the profession in his district.

Drs. Stewart, Locke and Haworth, of Lacombe, have organized a clinic and will have new up-to-date quarters as soon as they can be completed.

The following physicians have been discharged from the Forces and are returning to civilian practice: Dr. Stephen Carr, Brooks, Alta.; Dr. H. N. C. Begg, Edmonton; Dr. J. D. Ross, Edmonton; Dr. George Prieur, Calgary.

Dr. J. J. Porter, who has recently been discharged from the Forces where he was radiologist, has joined the staff of Dr. W. H. McGuffin.

Major H. N. C. Begg, who has returned from overseas, is joining the Eardley Allin Clinic, in Edmonton.

In the election of members of the Council of the College of Physicians and Surgeons, Dr. T. C. Michie, of Ponoka, was elected by acclamation for District No. 3, Red Deer.

In 1928, Alberta made provision for the sterilization of the mentally unfit in mental institutions. Under the Act a four man board of physicians, appointed by the Lieutenant-Governor in Council, may examine any person in Alberta being discharged from a mental institution. If the board feels that the patient has a mental disability that might be transmitted to an offspring, it may direct in writing that a surgical operation for sexual sterilization be performed. The operation can be undertaken only with the consent of the patient, if considered capable, or the consent of the next of kin. Up to the end of 1943, there had been performed 917 such operations.

The second annual meeting of the Associated Hospitals of Alberta was held at the Palliser Hotel, Calgary, on November 14, 15, and 16, 1945. Delegates from all parts of the Province were in attendance. Among the speakers were the Hon. Doctor W. W. Cross, Provincial Minister of Health; Dr. M. R. Bow, Deputy Minister of Health; Dr. G. Harvey Agnew, of Toronto, Secretary of the Canadian Hospital Council; Dr. A. F. Anderson, and Dr. A. C. McGugan, of Edmonton. Various phases of state health insurance, voluntary hospital insurance plans and other group hospitalization schemes were discussed.

Dr. A. C. McGugan, of Edmonton, was elected President for the coming year. G. E. LEARMONTH

British Columbia

The Vancouver Medical Association has resumed its Annual Dinners, and the first of these functions for five years was held at the Hotel Vancouver on November 30. The attendance was the largest on record, 280 men sitting down to table. Excellent entertainment was provided by some of the members, which has always been a tradition at these dinners, when no outside talent is to be sought to provide entertainment. The dinner was especially designed to welcome back our returning members, and they turned out in force.

The question to chlorinate or not to chlorinate has been bulking largely in Vancouver news for the last few weeks. On the one side the bacteriological experts and a considerable variety of opinion from other experts of Canada and the United States, together with all members of the medical profession except a very few, are entirely in favour of continuing chlorination of Vancouver water. The opposition is largely made up of local politicians, although there are one or two very sincere men who oppose it, one feels, on perfectly inadequate grounds.

Dr. C. E. Dolman, Head of the Department of Preventive Medicine and Bacteriology at the University of British Columbia has been forced into a position of being the leading advocate of the continuation of this process, and great credit is due to him for his unflinching attitude in putting forward the scientific aspect of the case.

A recent development in Vancouver has very greatly strengthened his position. One of the men working on the watershed has been found to be infected with *B. typhi Murium*, and two other men are under suspicion. It is quite probable, as Dr. Dolman has stated, that chlorination has been the means of averting a serious epidemic, which might have been started by these infected men.

Prospects for the establishment of a medical faculty at the University of British Columbia are slowly becoming brighter. The Premier of the Province has stated that the program of University extension will be started at an early date, and this includes laboratories and buildings for the medical faculty. It is not yet decided where the buildings for final year subjects will be established. A survey is being made of American and Canadian universities to aid in the establishment of this faculty.

Many men are returning to practice in British Columbia, but one of the greatest difficulties is the obtaining of office space. During the war no new office buildings have been erected, and in the major cities all office space is hopelessly over-filled. In Vancouver alone some forty men or more are unable to obtain office space. Efforts are being made by doubling up and otherwise to remedy this, as we hope, temporary shortage, but the condition is very serious.

Amongst the men recently returning to practice are the following: Colonel J. F. Haszard, Lieut.-Col. G. A. Bird, Lieut.-Col. Roy Huggard, Vancouver; Lieut.-Col. J. U. Coleman, Duncan; Major R. Scott-Moncrieff, Victoria; Major W. W. Simpson, Vancouver; Major J. Moscovich, Vancouver; Squadron Leader D. S. Munroe, Vancouver; Capt. F. E. Saunders, Vancouver; Surgeon Lieut. Cmdr. M. McRitchie, Major W. C. Mooney, Vancouver; Major R. W. Patten, Chilliwack; Capt. A. M. Inglis, Gibson's Landing; Flight-Lieut. W. R. Brewster, New Westminster; Flight-Lieut. V. W. Pepper, New Westminster, and Capt. N. B. Hall, Campbell River.

This partial list will show how rapidly these men are coming back.

J. H. MACDERMOT

Manitoba

Lieut.-Col. C. E. Corrigan, R.C.A.M.C., who recently returned from overseas after nearly five years of service, has been appointed Consultant in Surgery at Deer Lodge Military Hospital.

Dr. Harry Coppinger, Superintendent of the Winnipeg General Hospital, has been elected 3rd Vice-president of the American Hospital Association.

Major Herbert Meltzer, R.C.A.M.C., who saw service in England and Belgium, has been a visitor in Winnipeg. It is rumoured that he will be the superintendent of a new sanatorium at Edmonton.

Dr. O. C. Trainor, superintendent of Misericordia Hospital, Winnipeg, has been re-elected president of the Manitoba Hospital Service Association.

Dr. Frank Mathewson and Surgeon-Lieut. Murray McLandress have returned to Winnipeg from service overseas.

Surgeon-Commander and Mrs. Wendell Macleod, formerly of Montreal, have taken up residence in Winnipeg. During the last year Dr. Macleod was principal medical officer of the Royal Canadian Naval Hospital in Halifax. Following his discharge he will be attached to the Winnipeg Clinic and the Faculty of Medicine, University of Manitoba. Mrs. Macleod, who practises under her maiden name, Dr. Jessie A. McGeachy, will also be on the staff of the Winnipeg Clinic. She practised for five years in Toronto and was on the staff of University College Hospital and the medical health service of the University of Toronto.

The Faculty of Medicine held a dinner on November 13 in the Fort Garry Hotel to welcome the members of the faculty who have returned from active service.

On November 23 the citizens of Winnipeg voted in favour of a bylaw to expend $650,000 to erect a hospital on Morley Street for convalescents and aged persons.

ROSS MITCHELL

New Brunswick

The Saint John Medical Society held two meetings on October 25 and November 8 to discuss health insurance or a reasonable facsimile thereof. Discussion was wide open and all shades of opinion were aired. The President Dr. K. A. Baird kept discussion within certain limits while direction and instruction were provided by Dr. Geo. Skinner and Dr. E. W. Lunney. Similar meetings have been held in larger centres throughout the province and the Executive Committee of the N.B. Medical Society has also met twice to discuss the same subject. After their second meeting a committee composed of Dr. E. W. Lunney, Dr. A. F. VanWart and Dr. F. C. Jennings conferred with a select committee of the Provincial Cabinet.

Hon. Dr. F. A. McGrand, Provincial Minister of Health announced lately a further extension of Public Health Nursing Service. This branch of public health now covers the Counties of Charlotte, Madawaska, Victoria, Carleton, York, Kings, Westmorland, Gloucester, Queen and Sunbury.

Dr. L. DeV. Chipman has resigned as chief of the eye, ear, nose and throat division of the Saint John General Hospital. Dr. Chipman has served from 1916 to 1945 as a specialist in this branch of medicine and has now been appointed to the Honorary Consulting Staff.

Dr. L. M. Curren resigned as chairman of the Board of School Trustees of Saint John City after twenty-two years in that responsible position. During his term of office high school and vocational facilities were greatly extended. Dr. Curren has served his province as teacher, physician, surgeon, member of the Provincial Legislature, member of the Provincial Board of Health, educationalist and for the last several years as medical adviser and commissioner of the Provincial Workmen's Compensation Board.

Dr. D. C. Malcolm, of Saint John, has been confined to hospital for a few weeks and is now reported as vastly improved in health.

The Medical Council of New Brunswick met in Saint John November 13. By resolution provision was made to provide complimentary licence for a period of a complete year and the necessary fraction of the year following demobilization to all doctors serving in the armed forces who were registered in New Brunswick previous to such service. Election of officers for 1946 resulted as follows: *President*—Dr. A. R. Landry, Moncton; *Registrar*—Dr. J. M. Barry, Saint John; *Representatives to Medical Council of Canada*—Drs. A. S. Kirkland and H. E. Britton.

Dr. Ian A. MacLennan, of Campbellton, was appointed pathologist to the Moncton City Hospital by the Hospital Board on November 14, 1945. At this same meeting Dr. H. R. Ripley, radiologist, recommended the purchase of radium to complete equipment of department of radiology.

Dr. L. V. Parsons newly established in practice in Moncton was recommended to the Hospital Board of the Moncton City Hospital for the appointment as anæsthetist.

At a meeting in Saint John on November 8, largely attended by interested persons from Moncton, Fredericton and Saint John, reorganization of the N.B. Provincial Branch of the Canadian Cancer Society was begun. Dr. Milton Gregg, V.C., president of the University of New Brunswick was elected president. Mr. F. G. Spencer, vice-president and Mrs. Jerome Morris, of Moncton honorary secretary. Hon. D. L. MacLaren, Lieut.-Governor of the Province of N.B. consented to act as honorary president of the Provincial Branch. An advisory committee was appointed consisting of Mr. F. Harrison Howe, Dr. J. R. Nugent, of Saint John, Dr. H. R. Ripley, of Moncton and Dr. J. A. Melanson, Chief Medical Officer of the Department of Health from Fredericton. By the interest evident at this preliminary meeting it seemed certain that local branches will soon be established in the larger centres of the province.

On demobilization the following service doctors are again in practice: Dr. A. D. Gibbon, Saint John; Dr. T. A. Laidlaw, Sussex; Dr. A. L. Richardson, Petitcodiac; Dr. Henry Tonning, Saint John.

Dr. A. L. Donovan has returned from a refresher course in cardiology at Boston.

Dr. Daniel Tonning has lately attended a post-graduate course in gastroenterology and endocrinology at Chicago.

Dr. Murray McDonald has been and still is a patient in the General Hospital at Saint John suffering from hypertension. His condition has shown little improvement.

Dr. H. B. Bustin lately of the R.C.A.M.C. has joined the Pensions Medical Branch at Saint John.

Major R. B. Eaton on demobilization has joined the Sackville Medical Centre.

A. S. KIRKLAND

Nova Scotia

The appointment has been recently announced by the Governor in Council of Dr. C. M. Bethune, of Halifax, as Superintendent of the Victoria General Hospital to take effect in the near future. Dr. Bethune graduated in medicine from Dalhousie in 1931 and immediately was appointed resident physician at the Victoria General Hospital, where he remained for five years. He then took postgraduate work in anæsthesia and established himself in Halifax in this specialty. On the outbreak of war he joined the R.C.A.M.C. and from the first was engaged in an administrative capacity. His overseas record was one of remarkable efficiency winning for him the M.B.E. He returned to Canada and was discharged from the Services a few weeks ago.

Dr. Bethune, from his long acquaintance with the hospital and its problems, as well as his excellent experience in administration, is admirably suited for his new position. The appointment will carry the best wishes and co-operation of the medical profession in the Province to its new incumbent.

Dr. G. W. A. Keddy, who graduated from Dalhousie University in 1935, and practised for several years in Saint John, N.B., has returned from overseas. A recent announcement is to the effect that he plans to resume surgical practice in Halifax.

The annual meeting of the Provincial Medical Board was held at Halifax on November 23. The three new members, Dr. R. O. Jones, Halifax, Dr. L. M. Morton, Yarmouth, and Dr. J. Stewart Murray, River John, were present. Routine business, the reception of reports and election of officers and committees for the ensuing year constituted the agenda.

Dr. J. F. Hiltz, who has been acting superintendent to the Victoria General Hospital, Halifax, will shortly return to resume his duties at the Nova Scotia Sanatorium, Kentville.

Following a recent meeting of the Executive of the Medical Society of Nova Scotia, a Committee waited upon Premier Angus L. Macdonald to present the views of the Society with regard to any National Health Insurance program to be presented in future.

H. L. SCAMMELL

Ontario

The Council of the College of Physicians and Surgeons of Ontario held a two-day session November 14 and 15 with the president Dr. John R. Stewart in the chair. Routine business was disposed of and a committee appointed to act with a committee of the Ontario Medical Association to enquire into the state of medical practice in the Province. Notice was served upon the council that the College chambers on University Ave. had been expropriated in the interest of the Hospital for Sick Children which is acquiring a block of property to be exchanged for the block already purchased by Mount Sinai Hospital. A new home must be secured for the College and temporary quarters are being sought. This is proving a difficult task because of the demand for office space in Toronto.

The Council welcomed Dr. A. L. Richard as a new member. He represents the Medical Faculty of the University of Ottawa.

The College is opening a registry of specialists in January, 1946. Forms of application will soon be available and the committee in charge will pass on the applicants and report to Council in April. The standard decided upon is certification by the Royal College of Physicians and Surgeons of Canada.

The Royal College has already passed upon a large number of specialists in Ontario. Examinations will be organized in 1946 for candidates for certification who do not hold diplomas indicating such training as is demanded before qualifying a candidate to announce himself as a specialist.

The University of Western Ontario Faculty of Medicine held its second semi-annual Medical Alumnæ Lectureship November 28, 29, 30 with Dr. Roscoe R. Graham, of Toronto, as guest lecturer. An excellent program of theatre clinics, clinical conferences and lectures was presented to enthusiastic audiences. Dr. Graham was generous in his contribution of three lectures and two clinical conferences. He also spoke at the dinner of the Hippocratic Society on November 28.

The London Academy of Medicine heard Brigadier J. A. MacFarlane speak on "War surgery in retrospect" on November 22.

The National Sanitarium Association is sponsoring an endeavour to have the population of Greater Toronto and York County submit to x-ray examination in order to find the actual prevalence of tuberculosis in that area. About one thousand persons per day are being examined by the Gage Institute. The examinations are free, as the expenses are being met from funds collected for the purpose by the N.S.A.

A committee of the Ontario Medical Association augmented by representatives of the College of Physicians and Surgeons has begun a study of Standards of Medical Practice. The first meeting was held on November 28. Meetings will be held each month and an interim report may be expected when the annual meetings of the two bodies are held in April and May.

David W. B. Johnston, B.H., M.D., F.R.C.S.[C.], opened a practice limited to general surgery in London on November 1.

After six years in the Canadian Army, Dr. Bruce Hough of Amherstburg is resuming his medical practice in the Medical Arts Building in Windsor. Dr. Hough was the medical officer for the Essex Scottish Regiment before the war, so after war was declared he became its M.O. and went overseas in 1940. For the past three and one-half years Dr. Hough, who is the son of Mrs. Franklin A. Hough, Amherstburg, has been serving in hospitals in Africa, France, Belgium and Holland.

M. H. V. CAMERON

Prince Edward Island

To Dr. J. A. and Mrs. McMillan, Charlottetown Hospital, October 15, twin boys—Thomas Michael and Charles Joseph.

Dr. R. H. Kennedy, formerly of Alberton, and until recently serving with the R.C.A.F., has opened an office in Charlottetown.

Dr. Donald Campbell and Dr. Gilbert Houston, son of Dr. J. C. Houston, have recently returned to the staff of the Polyclinic, Charlottetown, after having served overseas during the war. Dr. Campbell was officer in charge of Surgery at No. 7 General Hospital, and Dr. Houston was in charge of the nose and throat department in the same hospital.

Dr. W. J. P. McMillan, O.B.E., was in Ottawa recently, attending the meeting of the Executive Council of the Canadian Medical Association.

Lieut.-Col. J. A. McPhee, Summerside, our appointee to the National Committee for the Medical Care of War Veterans, was in Ottawa attending a meeting of this Committee.

Dr. J. K. Beer, Kensington, has returned from Chicago, where he was doing postgraduate work.

Dr. A. E. Archer, recently appointed as Consultant in Medical Economics to the Executive Committee of the Canadian Medical Association, was in Charlottetown November 6 to 10. During this time Dr. Archer consulted with the Prince Edward Island Division with regard to Health Insurance, and with the Prince Edward Island Medical Society met the Executive Council of the Provincial Government. The meeting was for the purpose of presenting the Society's views with regard to proposed plans *re* Health Insurance. Dr. Archer's assistance was deeply appreciated.

A. J. MURCHISON

Quebec

La Division du Québec de l'Association Médicale Canadienne a choisi le Dr C. A. Gauthier de Québec comme son prochain président.

Le secrétaire de la Faculté des Sciences de l'Université de Montréal annonce les nominations suivantes: le Dr Ernest Gendreau devient professeur émérite de physique et le Dr N. R. Bouziane est nommé chargé de cours en chimie biologique.

Les Drs Jean Paul Bourque et Jean Paul Legault, assistants du regretté Dr Oscar Mercier, prennent à l'Hôtel-Dieu de Montréal la direction conjointe du service d'urologie.

Six médecins ont obtenu des bourses d'étude du gouvernement de la province pour l'année 1945-46. Ce sont les Drs Paul David, Madeleine Longtin, Fernand Gauthier, Georges Lachaîne, Jean Grignon, de Montréal, et le Dr Arthur Mercier, de Québec.

Les Drs Antonio Barbeau et Miguel Prados ont été nommés par l'Institut de Psychologie de l'Université de Montréal professeurs agrégés, le premier, de psychophysiologie, le second, de psychothérapie.

Le Dr Léon Gérin-Lajoie a été élu président du Cercle Universitaire de Montréal pour l'exercice 1945-46.

Le Dr N. Allaire a été nommé électro-radiologiste de l'hôpital général de Verdun; il remplace le Dr J. E. Panneton, démissionnaire.

Le Dr Lionel Lefleur, de Montréal, a été nommé radiologiste de l'hôpital St-Joseph des Trois-Rivières.

JEAN SAUCIER

Dr. D. H. Starkey and Dr. T. E. Dancey, both of Montreal, have been appointed advisers in pathology and psychiatry respectively to the Director-General of Treatment Services, Department of Veterans' Affairs.

Dr. Starkey became director of pathological laboratories for the Montreal district on his discharge from the Royal Canadian Navy with the rank of Surgeon Commander. He will continue in his appointment but will make frequent visits to Ottawa for consultation. He is a graduate of McGill University, and was in charge of chemical bacteriology and serology at the Royal Victoria Hospital until joining the navy as a medical officer in 1941.

He saw service at sea and was in charge of all medical laboratory services in the navy's medical branch.

Dr. Dancey is Chief of Service in psychiatry for the Montreal district. He graduated from McGill in 1934 and interned at the Central Division of the General Hospital. He was a resident physician at Verdun

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Protestant Hospital for seven years and since 1937 was demonstrator in psychiatry at McGill University.

Enlisting in 1942, Dr. Dancey was district psychiatrist for M.D. No. 4 until April, 1944, and then became neuro-psychiatrist specialist in a hospital in the United Kingdom, serving as officer commanding No. 1 Canadian Exhaustion unit until June, 1945. He was discharged from the army with the rank of major.

Saskatchewan

Legislation on the requirements of a pre-marital blood test which is required in all cases of applicants for a marriage license in the Province of Saskatchewan has been explained in detail by Dr. C. F. W. Hames, Deputy Minister of Public Health, in a communication directed to the doctors in this province:

"On October 25, 1944, the medical council of the College of Physicians and Surgeons of Saskatchewan approved a resolution that had been passed previously by the Canadian Medical Association General Council which among other things recommended 'premarital blood tests throughout Canada'. At the time that this resolution was received in this department, there was no legislation to this effect in any Canadian Province. However, there were thirty-two States in the United States which had by that time passed legislation to prevent the spread of syphilis through marriage by requiring that both the prospective bride and groom submit to examination before the issuance of a marriage license for the detection of syphilis which was or might later become communicable.

"On March 28, 1945, the Legislature of the Province of Saskatchewan passed an Amendment to the Marriage Act incorporating a mandatory blood test for syphilis as part of the health examination before the solemnization of marriage could take place. This Amendment, though passed, was not proclaimed. It is planned, however, to proclaim it on September 1. In April, 1945, the Alberta Legislature passed a similar Amendment to their Marriage Act which was put into effect on July 1.

"The Model Marriage Law with respect to syphilis embodies the following: (1) That both applicants for marriage license be examined for syphilis by a licensed physician. (2) That the examination be both clinical and serological including a blood test of a type approved by the State Department of Health preferably in an approved laboratory. (3) That the test should not be made more than thirty days before the license is applied for and that the licence when issued be valid for not more than sixty days. (4) That the blood test when necessary be performed without charge on request through the Department of Health. (5) That the filing of a certificate of medical examination may be waived by the judge of a proper court because of an emergency or some other cause. With this single exception, the physician must file a certificate of examination accompanied by the report of a laboratory test which includes the name and address of the applicant, the date and type of test but not the result. The result of the test should be filed with the medical record. (6) The decision as to the issuance of the medical certificate is left with the physician. He may certify the applicant, even though syphilis is present, provided he feels that the applicant is in a stage of the disease which is not likely to become communicable. Otherwise, treatment must be given and the immediate issuance of the certificate refused.

"The situation which will obtain after September 1 when the Amendment mentioned above will be put into effect substantially fulfills the requirements as outlined by Dr. Stokes in every particular. You will by this time have received a letter from the Registrar General with a copy of the Amendment and also a supply of certificates. You will have noted that the significant points involved are as follows: (1) The examination may be done within thirty days of the marriage instead of ten as in the past. (2) The examination must include a serological test for syphilis. (3) It is not necessary to indicate what the result of this test was on the certificate. (4) The decision as to whether the certificate should be issued comes under Section 3 of the certificate in which the physician states that the applicant is 'not suffering from a communicable disease, as defined under Public Health Act, which is in a communicable state'. Thus it is left entirely to the judgment of the examining physician as to whether the certificate should be issued or not. This will depend therefore upon whether or not cases of syphilis which are discovered in this way are considered by the physician to be in an infectious state or likely to become infectious.

"I am enclosing material which has been prepared in this department for reference use by physicians regarding the interpretation of serological tests for syphilis and also the infectiousness of syphilis. It is hoped that this material will be of some use to you.

"Steps are being taken to inform the public of the terms of this legislation."

Following the presentation to the Workmen's Compensation Board of Saskatchewan protesting against the low fee allowed for surgical repair of hernia a communication has been received with the information that the fee will be increased to $75.00 for single and $100.00 for double herniotomy. This will be effective from October 30, 1945.

As a result of a motion which was passed at the Annual General Meeting of the College of Physicians and Surgeons of Saskatchewan in September and further action by the Executive Committee of the Council all members of the profession in good standing will be accorded the full privilege of membership in the Canadian Medical Association, including subscription to the *Canadian Medical Association Journal*.

The annual fee for membership will be $25.00 for 1946.

Members of the College of Physicians and Surgeons of Saskatchewan serving in the armed forces and returning to practice have been granted full privileges without payment of annual fees for one full year after discharge from the services. The Canadian Medical Association has also granted the same privileges to returning medical practitioners.

The Department of Public Health has announced that it is desirous of obtaining applications from medical personnel who are qualified in Public Health Administration for full time posts which are available. Preference is to be given to applicants holding a Diploma in Public Health but suitable personnel will be given consideration for obtaining a fellowship or other assistance.

The medical population of the City of Regina has been greatly increased lately due to the release of service doctors who are rapidly adjusting themselves.

Dr. B. C. Leech has returned and is again head of anæsthesia at the Regina General, associated with him are Dr. M. W. Bowering and Dr. J. E. McCutcheon also recently discharged from the army and anæsthetists at the two hospitals. Dr. E. A. McCusker is very much on the job with the old firm, McCusker and Graham, Dr. H. M. Graham also being a veteran; they have recently been joined by Dr. T. J. Haughton. Dr. H. J. Spooner and Dr. R. B. Martin are both back in private practice doing orthopædics as well as the orthopædics of the D.V.A. at the new military wing. Dr. E. G. Spooner is in practice with Dr. G. J. McMurtry and Dr. J. D. Anderson. Dr. D. S. Gorrell has resumed private practice as ear, eye, nose and throat specialist. Dr. W. M. R. Palmer recently discharged is returning to private practice as soon as office space is available. Dr. J. B. Trudelle has resumed private

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practice. Dr. G. C. Bradley has opened an office in the McCallum Hill Building. Dr. May Malone recently discharged from the army is awaiting the completion of arrangements to return to England to do post-graduate work. Dr. F. W. Schroeder is in private practice of surgery as well as doing some surgery for the D.V.A. Dr. C. F. Bennett is in charge of the Anti-T.B. Clinic at Regina General. Dr. L. E. Cowan has taken over Dr. M. A. Currie's practice for 3 months. Dr. J. T. MacDougall is back with Dr. Scott at Indian Head. Dr. A. J. McDougal is assisting Dr. Hames in the Department of Public Health. And Dr. J. M. Miller is with the D.V.A. B. BRACHMAN

General

We learn through the Soviet Embassy at Ottawa that a five-year plan for Soviet Health Services for rehabilitation and national development has been evolved in Russia, under Professor N. Semashko. It is the fourth plan of its kind to be adopted in the U.S.S.R. Previous plans were aimed chiefly at industrial and collective farm power. These plans, however, have always provided not only for economic development but also for systematic improvements for living and cultural standards. They have achieved unprecedented progress in past years.

This new five-year plan provides for complete reconstruction of the national economy in districts formerly occupied by the Germans. These tasks will deal particularly with the elimination of the consequences of the war and radical improvement in medical service.

Attention is specially devoted to the problem of increasing the birthrate and reducing mortality. A recent government decree includes a number of extremely important measures for increasing the birthrate and provides aid for mothers of large families and extends the network of maternity institutions as well as medical and prophylactic institutions for children. By the end of the five-year period, the number of maternity beds in cities is to increase 1.5 times and in the countryside, 2.2 times as compared with 1945. The number of hospital beds is slated for a 30% increase in cities and 1.5 increase in rural areas, and army doctors are to double by the end of that period.

The Germans caused tremendous damage to Soviet Health Services. They wrecked and destroyed 6,000 hospitals, 33,000 polyclinics and dispensaries, 976 sanatoria, 656 rest-homes and 60 factories for pharmaceutical and medical equipment as well as ruining health resorts in the Crimea, Caucasus and other places. Many of these ruined institutions and enterprises have been restored in 1945. By the end of the new five-year plan period, the damage is to be completely repaired.

It is felt that the realization of the new five-year plan will mean a higher standard of living and therefore better health.

The American College of Physicians will resume its annual meetings in 1946 and has now definitely chosen Philadelphia, May 13-17, inclusive. Headquarters will be at the Philadelphia Municipal Auditorium, 34th Street below Spruce.

The meeting will be conducted under the presidency of Dr. Ernest E. Irons, Chicago, Illinois, and the general chairmanship of Dr. George Morris Piersol, Philadelphia, Pennsylvania.

Reprints for the Devastated Medical Libraries of Manila.—In connection with its campaign to help rebuild the medical libraries of Manila which were destroyed during the Japanese occupation, the Academy-International of Medicine requests that medical authors contribute eight or ten reprints of each of their articles which have been published since 1941. They may be sent at the regular parcel post rate of sixteen cents for the first pound and eleven cents for each additional pound, care of A. B. M. Sison, M.D., Philippine General Hospital, Manila, P. I.

Beit Memorial Fellowship for Medical Research.—In order that Canadian applicants for the Beit Memorial Fellowships for Medical Research may obtain their application forms more readily, arrangements are being completed whereby a supply of these forms will be available in the office of the Canadian Medical Association, 184 College Street, Toronto 2-B, Ontario.

Diphtheria in Europe.—Diphtheria, which reached epidemic proportions in a large part of central and northern Europe in 1942 and 1943, continues to be the leading epidemic disease and is still increasing rapidly in both Finland and Germany, the UNRRA Epidemiological Bulletin No. 19, issued in November, 1945, reports.

In Holland diphtheria has become one of the chief causes of death, as far as infectious diseases are concerned, second only to tuberculosis. France, Czechoslovakia, Belgium and Austria continue to have high morbidity and mortality rates from diphtheria. Only in Norway has the diphtheria wave reached its peak and begun to subside. The United Kingdom and Hungary have been able to continue methods of immunization in use prior to the war, and have a comparatively low number of diphtheria cases.

That the diphtheria epidemic is not confined to the Western World, is proved by reports of Japanese civilian officials to the Pacific Office of the Chief Surgeon, U.S. Army, which show that diphtheria is the most important epidemic disease in Japan. The Philippines also have a large number of cases.

A new journal on hæmatology is to appear this month. It is entitled *Blood: The Journal of Hæmatology*, and will be devoted exclusively to the field of blood and blood forming organs. The editor-in-chief is Dr. Wm. Dameshek, of Boston, and the editorial offices are at 25 Bennet Street, Boston.

Sale of Horse Meat.—Under P.C. 5983, September 11, the Minister of National Health and Welfare reports that horse meat and meat products thereof, when complying with the provisions of Section X of the regulations under the Food and Drug Act may be advertised for sale or sold to the general public, but it is desirable that when so advertised or sold to the general public, they shall be clearly labelled as such.

Josiah Macy, Jr. Foundation Reprint Service.—We learn that the Reprint Service of the Josiah Macy, Jr. Foundation will be discontinued on January 1, 1946. This Service was an attempt to bring new and important developments in the science of practise of medicine to medical officers of the United States Army and as far as possible also to other members of the Allied forces. More than five million copies of over four hundred medical and scientific articles were published by the Foundation's War Reprint Service during the last three years.

Prepayment Medical Care Organizations.—The third edition of Memorandum No. 55, Prepayment Medical Care Organizations, has been issued by the Social Security Board, Washington, D.C., Zone 25, and is obtainable at the United States Government Printing Office at 25c a copy. This edition relates to a period early in 1945 and includes the description of 235 organizations in the United States and 16 in Canada.

Life Insurance Medical Research Fund.—One hundred and forty-six life insurance companies in the United States and Canada have co-operated to establish an organization known as the Life Insurance Medical Research Fund. It is the purpose of this Fund to support fundamental research bearing on cardio-

vascular disease, including rheumatic fever, hypertension, arteriosclerosis, and allied disorders.

Applications for grants may now be made to the Chairman of the Advisory Council and should be transmitted in duplicate through the Administrative Officer of the institution making application. Requests for grants should include a description of the proposed research, a budget, and the date when funds are desired. Applications received by February 1, 1946, will be given consideration at a meeting of the advisory Council to be held on or about March 1, 1946.—Francis G. Blake, M.D., Chairman Advisory Council, Yale University School of Medicine, 333 Cedar Street, New Haven 11, Connecticut.

Pædiatric Antiques on Tour. — It has been well said that more progress has been made in pædiatrics during the past three or four decades than in all the time before that. As applied to the feeding part of pædiatrics, the Mead Johnson Collection of Pædiatric Antiques bears eloquent witness to the great strides made. Without such evidence, it would be difficult, indeed, to imagine our own grandparents being fed from some of these odd-shaped utensils that defied thorough cleansing.

From a personal hobby enjoyed by the late E. Mead Johnson, Jr., the Collection of Pædiatric Antiques, illustrated in the pages of a catalogue just issued, has evolved into one of considerable historical importance, depicting as it does the progression of infants' feeding vessels from the Greece of twenty-five centuries ago down to time within our own memory. The collection has been steadily growing in size and scope and is of increasing interest for teaching purposes via the historical route. Hence it is that, by request, the collection now goes on an annual pilgrimage to colleges, hospitals, museums, libraries and other institutions of learning. Arrangements may be made for "stop-overs" upon application to the curator, Mead Johnson & Company, Evansville 21, Indiana, U.S.A.

The 1945 Canada Year Book.—The 1945 edition of the Canada Year Book is now available. The extraordinarily wide scope of this Year Book is fully recognized. It is a unique source for authoritative information on the various aspects of Canada, both geographical, commercial and sociological. Fresh material appears, such, for instance, this year, as special articles on the Canadian Eastern Arctic; Canadian Oil Production; Changes in Manufacturing from Peace to War; Northern Airfields; Activities of the Wartime Prices and Trade Board; Democratic Functioning of the Press, etc. Other articles which have already appeared, and have continuing value will be reprinted, or can be obtained on request.

By special concession a limited number of paper bound copies have been set aside for ministers of religion, students and teachers, at $1.00 each. Bound copies are supplied at $2.00 each. Applications for these should be made to the Dominion Statistician, Dominion Bureau of Statistics, Ottawa.

Physical ills are the taxes laid upon this wretched life; some are taxed higher, and some lower, but all pay something.—Lord Chesterfield.

Book Reviews

Acute Injuries of the Head, their Diagnosis, Treatment, Complications and Sequels. G. F. Rowbotham, Late Hunterian Professor of Surgery, and Dickinson Scholar, Surgeon in Charge, Department of Neurological Surgery, Newcastle General Hospital. 2nd ed., 424 pp., illust. $9.00. Livingstone, Edinburgh; Macmillan, Toronto, 1945.

This is a book about head injuries that is comprehensive and at the same time very practical. It is not a compendium. The author is explaining his own views about cases of head injury. A great deal of hard thinking and practical experience has formed the background. Recent advances, such as electroencephalography, are discussed without undue emphasis. On the whole the greatest value of the book is derived from its well-balanced outlook. It is easy and pleasant to read, and so arranged that special aspects are readily accessible for reference. The point of view regarding operative treatment is representative of sound neurosurgical practice. The second edition has been improved by the addition of more illustrations and a valuable chapter on Rehabilitation. For all those whose work brings them in contact with any aspect of the treatment of head injuries, whether as student, general practitioner, or specialist, this book can be given an unqualified recommendation.

Bone-grafting in the Treatment of Fractures. J. R. Armstrong, A/W/Comm. R.A.F.M.S. and Surgeon-in-Charge of an R.A.F. Orthopædic and Fracture Centre. 175 pp., illust. $7.50. E. & S. Livingstone, Edinburgh; Macmillan, Toronto, 1945.

In this small monograph, the author has presented his subject in a brief but thorough manner. In the first part of the book the principles, indications and contraindications of bone-grafting are reviewed. He stresses the fact that the decision to carry out a bone-graft should never be made lightly. The author favours the onlay method with fixation by vitallium screws. Pre- and postoperative treatment are well discussed, and he emphasizes the importance of Lane's technique during the operation. The author does not agree with those schools which have given up the rigid use of this technique and claims their results have not been satisfactory.

In the latter half of the book, each bone in which bone-grafting is a recognized procedure is discussed from the point of view of indications and contraindications, pre- and postoperative treatment, and the technique of operation. The book is well illustrated, many of the illustrations being in colour.

Bone-grafting has a definite place in the treatment of fractures. Orthopædic surgeons and general surgeons who treat large numbers of fractures will find this book extremely useful.

BOOKS RECEIVED

Index of Differential Diagnosis of Main Symptoms. Edited by H. French, Consulting Physician, Guy's Hospital, London. 6th ed., 1128 pp., illust. $25.00. Wright, Bristol; Macmillan, Toronto, 1945.

Outlines of Physical Methods in Medicine. G. D. Kersley, Physician of the Royal National Hospital for Rheumatic Diseases and the Royal United Hospital, Bath. 85 pp. 6s. Heinemann, London, 1945.

Clinics. Vol. 4, No. 1. Edited by G. M. Piersol, Professor of Medicine, Graduate School of Medicine, University of Pennsylvania, Phila. 230 pp., illust. $3.00. Lippincott, Montreal, 1945.

The Epidemiology of Diphtheria During the Last Forty Years. W. T. Russell. 52 pp. 1s. His Majesty's Stationery Office, London, 1943.